

parts are uniform cinnamon like the rump and under surface. Mr. Layard and Mr. Gurney have overlooked these differences, and make the southern bird the same as the north-eastern." On this point I wish to observe that Rüppell, in his 'Neue Wirbelth.' pl. 26. fig. 1, represents *Thamnolea albiscapulata* with both the upper and under tail-coverts entirely cinnamonaceous, and not black as in the specimens examined by Dr. Finsch.

P. 318. ARDEA ATRICAPILLA (Afzel.).

Dr. Finsch refers to an opinion which I expressed, and which was quoted in 'The Ibis' for 1869, p. 437, that this Heron is not separable from *A. javanica*, Horsf.

I have subsequently had reason to alter my views on this subject, as will be seen on reference to 'The Ibis' for 1870, p. 151, where I have expressed my belief that the two races are specifically distinct.

3. On some Indian Reptiles. By JOHN ANDERSON, M.D.,  
F.L.S., F.Z.S., &c., Director of the Indian Museum,  
Calcutta.

[Received February 2, 1871.]

The reptiles described in the following notes, with a few exceptions, have been added to the collection of the Indian Museum, Calcutta, within the last five months. As some are recent additions to the Indian fauna, while others belong to little-known species, I have given a full description of each, and have taken, as far as possible, Dr. Günther's work on the reptiles of India as my guide. When the synonyms of a species are not given it is to be understood that they are accepted as defined by Günther.

It will be observed that a number of Mr. Blyth's types of Batrachia in the Indian Museum have been identified. These are of peculiar interest, as Mr. Theobald was under the impression when he drew up his catalogue of the reptiles in the Asiatic Society's Museum that they had disappeared from the collection.

As the majority of the specimens from which the descriptions were derived reached me very shortly after the reptiles had been collected, it was in my power to describe the coloration almost as it occurs during life; and from the circumstance, too, that the collections were made on a very large scale, and embraced a very extended series of duplicates, I have been in a position to indicate many variations of species hitherto unrecorded.

*List of Species described in the following pages.*

CHELONIA.

EMYDIDÆ.

1. *Pangshura tecta*, Gray. Jumna, Agra.

2. *Pangshura flaviventer*, Gthr. Jumna, Agra.
3. *Batagur elliotti*, Gray. Jumna, Agra.

## TRIONYCIDÆ.

4. *Trionyx phayrei*, Theobald. Penang.

## SAURIA.

## VARANIDÆ.

5. *Varanus flavescens*, Gray. Agra.
6. *Varanus dracenu*, Linn. Khasi Hills.
7. *Varanus lunatus*, Gray. Agra.

## LACERTIDÆ.

8. *Tachydromus haughtonianus*, Jerdon. Assam.
9. *Tachydromus scolineatus*, Daud. Assam, Khasi Hills.

## ZONURIDÆ.

10. *Pseudopus gracilis*, Gray. East of Dacca, Khasi Hills, and Darjeeling.

## SCINCIDÆ.

11. *Euprepes macularius*, Blyth. Assam, Cachar, Eastern Bengal, and Central India.
12. *Euprepes trivittatus*, Gray. Madras.
13. *Eumeces sikimensis*, Blyth. Darjeeling.
14. *Eumeces indicus*, Gray. Darjeeling and Assam.
15. *Eumeces albopunctatus*, Gray. Assam.
16. *Riopa anguina*, Theobald. Prome, Burmah.

## GECKOTIDÆ.

17. *Gecko smithii*, Gray. Java.
18. *Hemidactylus maculatus*, D. & B. Burrabhoom, Berar.
19. *Phelsuma andamanense*, Blyth. Andamans.
20. *Gymnodactylus fasciolatus*, Blyth. Subathoo.
21. *Gymnodactylus variegatus*, Blyth. Moulmein.
22. *Gymnodactylus khasiensis*, Jerdon. Khasi Hills.
23. *Eublepharis macularius*, Blyth. Salt range.

## AGAMIDÆ.

24. *Draco dussumieri*, D. & B. Travancore.
25. *Japalura variegata*, Gray. Darjeeling.
26. *Sitana minor*, Gthr. Central Provinces.
27. *Calotes versicolor*, Daud. Darjeeling.
28. *Calotes maria*, Gray. Garo Hills.
29. *Calotes mystaceus*, D. & B. Garo Hills.

30. *Oreotiaris tricarinatus*, Blyth. Darjeeling.  
 31. *Tiaris subcristata*, Blyth. Andamans and Nicobars.  
 32. *Uromastix hardwickii*, Gray. Agra district, Punjab, and Scind.  
 33. *Charasia dorsalis*, Gray. Western Bengal, Central and Southern India.

## OPHIDIA.

## TYPHLOPIDÆ.

34. *Typhlops bothriorhynchus*, Gthr. Garo Hills.  
 35. *Typhlops horsfieldii*, Gray. Assam.

## OLIGODONTIDÆ.

36. *Oligodon dorsalis*, Gray. Khasi Hills.  
 37. *Simotes russellii*, Daud. Singhbloom.  
 38. *Simotes punctulatus*, Gray. Darjeeling.  
 39. *Simotes bicatenatus*, Gthr. Calcutta and Garo Hills.

## COLUBRIDÆ.

40. *Ablabes rappii*, Gthr. Darjeeling.  
 41. *Ablabes collaris*, Gray. Darjeeling and Garo Hills.  
 42. *Trachischium fuscum*, Blyth. Darjeeling.  
 43. *Coluber porphyraceus*, Cantor. Darjeeling.  
 44. *Composoma reticulare*, Cantor. Garo Hills and Darjeeling.  
 45. *Cynophis helena*, Daud. Galle, Ceylon.  
 46. *Ptyas korros*, Reinw. Assam.  
 47. *Zamenis diadema*, Schlegel. Agra.  
 48. *Zamenis brachyurus*, Gthr. Berar.  
 49. *Tropidonotus quincunciatus*, Schlegel. Assam, Agra.  
 50. *Tropidonotus macrophthalmus*, Gthr. Darjeeling, Assam.  
 51. *Tropidonotus platyceps*, Blyth. Darjeeling.  
 52. *Tropidonotus subminiatus*, Reinw. Darjeeling, Assam.  
 53. *Tropidonotus himalayanus*, Gthr. Darjeeling.  
 54. *Tropidonotus stolatus*, Linn. Assam.  
 55. *Tropidonotus plumbicolor*, Cantor. Ceylon.

## HOMALOPSIDÆ.

56. *Cantoria dayana*, Stoliczka.  
 57. *Cerberus rhynchops*, Schneid. Bengal, Burmah, and Andamans.  
 58. *Ferania sieboldii*, Schleg. Burma and Agra.  
 59. *Hipistes hydrinus*, Cant. Moulmein River.

## PSAMMOPHIDÆ.

60. *Psammophis condanarus*, Merr. Simla, Himalaya, and Lower Bengal.  
 61. *Psammodynastes pulverulentus*, Boie. Darjeeling.

## DENDROPHIDÆ.

62. *Dendrophis picta*, Gm. Darjeeling and Garo Hills.  
 63. *Dendrophis picta*, Gm., var. *andamanensis*. Andamans.

## DRYIOPHIDÆ.

64. *Tragops prasinus*, Reinw. Darjeeling.  
 65. *Dipsas hexagonota*, Blyth. Darjeeling, Bengal, and Andamans.  
 66. *Dipsas forsteni*, D. & B. Western Bengal and Ceylon.

## LYCODONTIDÆ.

67. *Lycodon striatus*, Shaw. Agra and Lahore.  
 68. *Leptorhytaon jara*, Shaw. Garo Hills.

## AMBLYCEPHALIDÆ.

69. *Pareas monticola*, Cant. Afghanistan, Mesopotamia, and Khasi Hills.

## ERYCIDÆ.

70. *Eryx johnii*, Russell. Agra.

## ELAPIDÆ.

71. *Ophiophagus elaps*, Schlegel. Darjeeling and Eastern Bengal.  
 72. *Bungarus cæruleus*, Schneid. Assam and Agra.  
 73. *Callophis macclellandii*, Reinh. Assam.

## HYDROPHIDÆ.

74. *Platurus fischeri*, Jan. Calcutta.  
 75. *Hydrophis jerdonii*, Gray. Pooree, Bengal.  
 76. *Hydrophis chloris*, Daud. Pooree, Bengal.  
 77. *Hydrophis lindsayi*, Gray. Calcutta.  
 78. *Hydrophis coronata*, Gthr. Calcutta.  
 79. *Hydrophis cantoris*, Gthr. Calcutta.  
 80. *Hydrophis granosa*, n. sp. Sand Heads, Hughli.  
 81. *Hydrophis cyanocincta*, Daud. Pooree, Bengal.  
 82. *Enhydrina schistosa*, Daud. Gopalpore.

## CROTALIDÆ.

83. *Trimeresurus gramineus*, Shaw. Darjeeling.  
 84. *Trimeresurus erythrurus*, Cant. Assam.  
 85. *Trimeresurus carinatus*, Gray. Garo Hills.  
 86. *Trimeresurus monticola*, Gthr. Darjeeling, Khasi Hills, and Yunan, W. China.  
 87. *Trimeresurus convictus*, Stoliczka. Pinang.  
 88. *Halys himalayanus*, Gthr. N.E. of Simla.

## VIPERIDÆ.

89. *Daboia russellii*, Shaw. Calcutta.  
 90. *Echis carinata*, Schneid. Western Bengal, Madras, and Agra.

## BATRACHIA.

## BATRACHIA SALIENTIA.

91. *Rana kuhlii*, Schleg. — ?  
 92. *Rana cyanophlyctis*, Schneid. Bengal, Burmah, and Malayan peninsula.  
 93. *Rana tigrina*, Daud. Agra.  
 94. *Rana liebighii*, Gthr. Sikkim.  
 95. *Rana gracilis*, Wieg. C. India, Bengal, Burmah, and Malayan peninsula.  
 96. *Rana fusca*, Blyth. Tenasserim.  
 97. *Rana crassa*, Jerdon. Carnatic and Ceylon.  
 98. *Pyxicephalus breviceps*, Schneid. Agra.  
 99. *Xenophrys monticola*, Gthr. Darjeeling.  
 100. *Cacopus globulosus*, Gthr. Bengal (Calcutta).  
 101. *Diplopelma berdmorei*, Blyth. Pegu.  
 102. *Diplopelma interlineatum*, Blyth. Pegu.  
 103. *Bufo pantherinus*, Boie. Agra.  
 104. *Bufo melanostictus*, Schneid. Agra.  
 105. *Bufo sikkimensis*, Blyth. Sikkim.  
 106. *Hylorana nigrovittata*, Blyth. Pegu.  
 107. *Hylorana nicobariensis*, Stoliczka. Nicobars.  
 108. *Polypedates maculatus*, Gray. Darjeeling.  
 109. *Polypedates quadrilineatus*, Wieg. Assam.  
 110. *Polypedates smaragdinus*, Blyth? Assam.  
 111. *Polypedates marmoratus*, Blyth. Pegu, Kakhyen Hills, N.E. of Burmah, and Darjeeling.  
 112. *Polypedates hascheanus*, Stoliczka. Pinang Hill.  
 113. *Polypedates annectens*, Jerdon. Khasi Hills.  
 114. *Rhacophorus maximus*, Gthr. Assam and Khasi Hill.  
 115. *Callula pulchra*, Gray. Calcutta, and Upper Burmah.

PANGSHURA FLAVIVENTER, Gthr. Rept. Brit. Ind. p. 35.

This specimen was found on the Jumna, near Agra. It has the markedly bell-shaped first vertebral, but wants the impression on the middle of the second and third costal plates mentioned by Günther. The gulars are nearly as broad as long, but their suture is as long as that of the postgulars. The transverse suture between the gulars and pectorals is not so marked as in the figure in the 'Reptiles of British India.' In every other respect, almost to its size, 8" 4"', it is identical with Günther's description.

PANGSHURA TECTUM (Bell); Gthr. *l. c.* p. 33.

Jumna River, Agra.

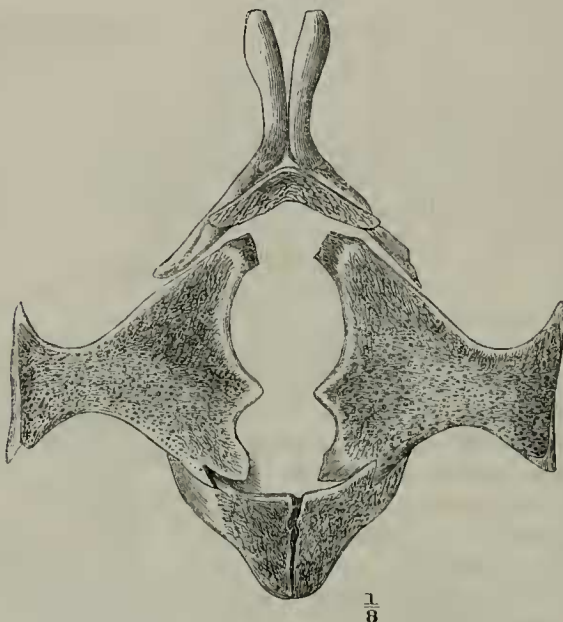
BATAGUR ELLIOTTI, Gray; Gthr. *l. c.* p. 40.

A specimen from the Jumna River, Agra, agrees in every particular with this species. It is immature, and the sternum is only imperfectly joined to the carapace.

Length 3'' 9'''.

TRIONYX PHAYREI, Theobald, Journ. Proc. Linn. Soc. x. (1868) p. 18.

*Trionyx jeudi*, Gray, Proc. Zool. Soc. 1869, p. 217, fig. 19, et Suppl. Cat. Shield Rept. B.M. 1870, part 1, p. 97, fig. 32.



Sternum of *Trionyx phayrei*.

I have lately received a specimen of this fine species from Penang. It measures along the curve of the carapace 27'' 6''' ; osseous portion of carapace 19'' 6''' . Breadth in middle 22'' 3''' ; osseous portion at same point 20'' 6''' . Sternum, length of osseous portion 21'' 6''' . Greatest breadth of abdominal plates 21'' . Seven osseous plates, of which five are visible and granular ; the anterior pair long and linear, 5'' 9''' × 1'' , in contact behind, divergent anteriorly. Odd osseous plate semicircular, 7'' 5''' along the curve, 1'' 3''' in diameter in the mesial line ; anteriorly in contact with the anterior pair, and posteriorly with the abdominal ones. Greatest length of abdominal plates 8'' ; they enclose an hour-glass-shaped cartilaginous area, the anterior portion being the largest, and measuring 4'' 3''' in diameter and 6'' 8''' in length from the posterior contraction to the odd plate.

The posterior dilatation is 3" 3''' in diameter, and 3" 5''' in length. The greatest external length of the abdominal plates is 7", and their narrowest portion measured antero-posteriorly is 2" 6''' . The inguinal plates are triangular, and in close contact with the abdominal ones, and form a zigzag suture with each other: their greatest length is in the mesial line, 4" 3''' ; and the greatest breadth across the anterior margin of one is 4" 5''' . The odd and inguinal sutures are marked with many raised lines bearing tubercles in some cases. The lines are rather weak for the size of the specimen. The abdominal plates are marked with lines of the same character as in the former; but the tubercles are much more numerous, especially on the external and internal portions, and on the former in particular they form well-marked, closely packed, shining papillæ.

There is a well-marked swelling anteriorly on the mesial line, with a slight depression on either side externally and posteriorly; the vertebral line is concave behind the swelling within about two inches of the end, where it is again convex.

The general surface is not so rough compared with the great size of the animal as in *T. gangeticus*.

The wavy raised lines and the tubercles that they bear are more sparse and coarser on the vertebral line, and along the lines of the sutures of the costal plates, and not merely on the vertebral line, as observed by Theobald.

The chief differences that separate it from *T. gangeticus* are the less developed character of the osseous portion of the sternum, and the relatively finer character of its sculpturing on both aspects. The toes are broadly webbed, and the claws are strong conical structures, the largest being about one inch in length.

*T. jeudi*, which is doubtfully assigned by Dr. Gray to the island of Java, was described from a skull in the British Museum. This I have carefully compared with the skull of the specimen from which the foregoing description is derived, and cannot detect any characters by which to separate the two.

#### VARANUS LUNATUS, Gray; Gthr. *l. c.* p. 66.

This species appears to be common in the Agra district. The adults are olive-brown above, yellower on the tail and underparts, and very obscurely banded on the sides, with a darker tint of the same colour as the upper parts, where the banding is scarcely perceptible. It is more marked, however, on the tail. Some of the specimens are black, spotted on the sides and back in almost the same way as *V. dracæna*. The largest specimen is 45½ inches, of which the tail measures 26" .

These lizards are much infested by ticks about the anal region, neighbourhood of head, and body generally.

#### VARANUS FLAVESCENS, Gray; Gthr. *l. c.* p. 65.

I have received a young specimen of this species from Agra. It is light yellow, banded with brown.

*VARANUS DRACÆNA*, Linn. ; Gthr. *l. c.* p. 66.

This species also occurs in the Agra district ; and I have received a specimen from the Khasi Hills. The latter has eighty-three, and the former eighty-five transverse rows of scales between the gular fold and the groin.

*TACHYDROMUS HAUGHTONIANUS*, Jerdon, Proc. As. Soc. 1870, p. 72.

Four pairs of chin-shields, the last as large as the three anterior pairs. Upper labials irregular, 8 + 9 ; eight very narrow lower labials. Six longitudinal series of strongly keeled dorsal scales ; ten longitudinal rows of strongly keeled abdominal scales ; twenty-seven transverse rows from the axil to the inguinal pores. A line of enlarged granules along the lateral margins of the dorsal and ventral scales. Axilla and some distance behind it granular. One pair of inguinal pores at the base of the thigh. A large central anal shield, with two smaller pairs external to it. Upper surface and front of the limbs with large, almost shield-like scales, hinder and under aspect granular. Tail covered with large strongly keeled scales.

Upper surface of shady brownish black, disappearing on the middle of the tail. A greenish-yellow band from above and before the eye, along the external series of dorsal scales, disappearing on the base of the tail. A black band from the nostril, through the eye and one-half of the ear, along the granular area of the side, paling to olive-brown posteriorly, and disappearing on the base of the tail. From the lower margin of the ear to the nostril in a straight line, involving the upper labials, and all the under surface of the body is yellow. Limbs yellowish, their upper surface finely and densely punctulated with brown. Tail yellowish. Length 8'' 2''' ; tail 5'' 9'''.

*Hab.* Goalpara, Assam.

I cannot allow Dr. Jerdon's statement that he had my permission to describe and name this Lizard to pass without comment. I placed the Museum collection of Reptiles at Dr. Jerdon's disposal for comparison ; but I certainly never contemplated that he would make use of the confidence I reposed in him to describe this Lizard without my sanction.

*TACHYDROMUS SEXLINEATUS* (Gthr. *l. c.* p. 69) is not uncommon in Assam and the Khasi Hills.

*PSEUDOPUS GRACILIS*, Gray ; Gthr. *l. c.* p. 74.

I have received specimens of this species from the undulating country to the east of Dacca, from the Khasi Hills, and Darjeeling (3500 ft.). I obtained it also in the Sanda valley, Western Yunan, at an elevation of 1900 feet. Mr. Blyth purchased his specimens in Rangoon. Its occurrence in these localities, all of which are subject to a heavy rainfall, would seem to indicate that it is partial to moisture.

I have since received two other specimens from Darjeeling, one



with the tail perfect, which is a rare circumstance in this reptile. The largest specimen, with the tail imperfect, has the body 5" 3''' in length; and the measurements of the perfect specimen are, body 4" 3''', tail 9" 3'''. The dorsal scales are in sixteen rows from fold to fold, of which the dorsal ten or twelve are very strongly keeled. The youngest specimen has only a few obscure dull brown spots on the back; but the larger one is marked by irregular bright blue wavy cross bands margined anteriorly with black. It occurs at Darjeeling at 3500 feet.

*EUPREPES MACULARIUS*, Blyth; *Gthr. l. c.* p. 81.

Supranasals separated from each other by the single præfrontal, which forms a small suture with the vertical. The fifth upper labial is below the orbit, and much longer than high. Opening of the ear of moderate size, with a tubercle in front. Scales with from five to seven keels; twenty-eight to thirty longitudinal rows round the body, and thirty transverse series between the axils. Fore limb when laid forward reaches to the middle of the eye; and the hind limb covers more than two thirds of the interval between the axils.

Dark brown above, with eight narrow longitudinal broken black lines produced by linear black spots, or with eight lines of dark brown spots beginning over the shoulder, sometimes restricted to lower region of back, at other times entirely absent. A broad black band, spotted with white, begins behind the eye, and is continued to the thigh, where it is resolved into dark brown lines, which are prolonged on to the side of the tail. Outside of limbs white-spotted; upper labials white, margined with brown. In the month of August below and behind the shoulders suffused with orange. Length, adult  $2\frac{2}{8}$ , tail  $3\frac{5}{8}$ , =  $5\frac{7}{8}$  inches.

Specimens from the Central Provinces of India have no traces of black lines, but are sometimes spotted on the posterior half, but in others they are without spots. Five is the prevailing number of keels, although a few can be detected with seven. The brown line of the side is not well marked, and is nearly broken up into black spots, among which a few white ones are interspersed. Specimens from Raipur have much the same character as the foregoing; and, indeed, the southern specimens have the brown band along the side, much more feebly marked than in specimens from Assam, which was in all likelihood the locality from which Blyth obtained his type. Specimens from Sirgooja, which lies as it were halfway between Upper Assam and the southern Indian localities, have nearly all the coloration of the Assam ones, although the black spots do not unite to form continuous dorsal lines. The further south we proceed the more uniform do the colours appear to become.

This species does not appear to attain the size of *E. rufescens*, with which it could never be confounded; and my largest specimen out of twenty-seven is  $5\frac{7}{8}$  inches in length.

It appears to be a widely spread form; and I have it from Goalpara, Assam, Cachar, Sirgooja, Bilaspur district, and S.E. Berar and Bhandara, Central Provinces.

*EUMECES TRIVITTATUS*, Gray, would seem to be more nearly allied to *E. macularius* than to *E. rufescens*. It has five keels, and thirty-six longitudinal rows of scales round the body, and forty-five to forty-nine transverse rows between the axils. The nasals form a suture in front of the præfrontal, and the postfrontals a broad suture in front of the vertical. The white vertebral and lateral bands are margined with darker brown than the intervening brown space, and the shields of the head are partially margined with dark brown. The fore limb when laid forward reaches to the angle of the mouth, and the posterior limb about halfway between the two axils.

*Hab.* Salnat, Madras.

*EUMECES SIKIMENSIS*, Blyth.

*Mocoa sikimensis*, Blyth, Journ. As. Soc. Beng. vol. xxii. p. 652.

*Eumeces himalayanus*, Gthr. Rept. Brit. Ind. p. 86.

? *Eumeces indicus* (Gray), Gthr. *l. c.* p. 89.

This species agrees in its transparent eyelid and all its other details with Günther's *E. himalayanus*.

I have lately received two specimens from Darjeeling, from an elevation of 4500 feet.

*EUMECES INDICUS*, Gray ; Gthr. *l. c.* p. 89.

Three specimens have from thirty-six to forty longitudinal rows of scales round the body, with about fifty transverse series between the axil and groin.

Length.	Tail.
in.	in.
$7\frac{5}{8}$	$3\frac{6}{8}$
7	$3\frac{4}{8}$
$5\frac{3}{8}$	$2\frac{5}{8}$

The back of the young specimen is olive-brown, with two longitudinal series of black spots from before the shoulder to beyond the tail. The broad lateral band is well defined and covered with white spots, and has an ill-defined white line below it, extending from the angle of the mouth to the groin ; the sides of the throat and the belly below it are marbled with fine black spots. Upper surface of the limbs finely spotted with black.

*Hab.* Darjeeling, Geelsaugor, and Assam.

*EUMECES ALBOPUNCTATUS*, Gray.

This specimen unfortunately wants the tail ; the body measures 2" 4". The back has four lines of small dots along its middle ; and the blackish brown of the sides is spotted with white. Length of hind limb 6".

The largest specimen in this museum measures 5" 4", of which the tail forms 3" 9". There are thirteen, and all have four dorsal lines of small dots. Blyth's specimens, said to have come from

Mergui, are not separated under this locality ; and it is impossible to say whether they were of this species.

*Hab.* Debrooghur, Assam.

*RIOPA ANGUINA*, Theobald, Journ. Proc. Linn. Soc. Lond. vol. x. p. 27.

Lower eyelid transparent. The body very much elongated and slender ; limbs small and feeble. The distance between the axil and snout is contained two and a half times in the length between the fore and hind limbs. Tail little more than the distance between the vent and fore limbs. The fore limb when laid forwards falls considerably short of the ear, and equals the distance from the ear to halfway between the eye and the tip of the snout. The hind limb is the distance between the axil and the ear, and is in excess of the distance between the ear and the snout. Snout moderately short and pointed ; supranasals forming a broad suture behind the rostral ; the frontal and vertical suture widely separating the first frontals. Vertical moderately elongated, lateral margins convergent to a point behind. Two pairs of occipitals. Four large superciliaries with two small scale-like shields behind the last. Seven upper labials. A large broad shield behind the mental, with two large shields behind the former, forming a long suture with each other and succeeded by a small triangular shield with a large one on either side of it. Ear without denticulations. Twenty-two series of smooth scales round the middle of the body ; the scales are rather broad, and rounded behind ; sixty-five rows of scales between the fore and hind limbs. Uniform olive-brown above, with or without a line of black spots along the side of the back, margined above by a pale narrow band, sometimes obscurely spotted with white on the side behind the ear and above and behind the shoulder. Upper surface of the tail yellowish brown ; under surface yellowish.

Prome, Upper Burmah.

Dr. Stoliczka \* has recently described another species of this genus, *R. lineolata*, with a scaly eyelid and twenty-eight series of scales round the body.

*GECKO SMITHII*, Gray ; Gthr. *l. c.* p. 103.

Granular above, the granules flat and arranged somewhat in transverse rows on the body and tail ; many large circular flattened tubercles with a small central prominence interspersed among the granules, smaller on the occiput and temporal region, and large on the body, and arranged in transverse rows on the tail at regular intervals. Sixteen low upper labials, and twelve deep lower ones ; two large shields behind the mental with an azygos one behind them, with two small ones on either side of it ; a line of four large shields between the second, third, and fourth lower labials, with about five parallel shields below the remaining labials. The granules on the occiput and between the eyes small, those on the eyelid large and

\* Journ. As. Soc. Beng. 1870, vol. xxxix. p. 175.

circular. Two large plates behind the rostral, with a moderate-sized azygos shield wedged into the hinder margin of their suture.

General colour dark brown, paler on the head. Six cross bands, formed by about six white spots, usually involving a large tubercle. A line of white spots from the lower posterior margin of the eye, over the eye, and round the nape to the opposite eye; a similar lunate band of spots from ear to ear over the shoulder; an enlarged parotid-like gland on the side of the neck before the shoulder. Tail with eight white bands; the last in the specimen before me is terminal; but the tip of the tail appears to have been lost. Thirty longitudinal lines of small scales in the middle of the belly. Under surface dirty yellow, sparsely marbled with brown. Feet white-spotted.

Length of body 2" 4"', tail 2" 5'''.

*Hab.* Java.

*HEMIDACTYLUS MACULATUS*, D. & B.; *Gthr. l. c.* pp. 107, 108.

Two specimens, male and female, from Burraboom have only ten and nine upper labials, the lower labials in each being eight. The femoral and præanal pores are interrupted in the middle by the breadth of four lines of abdominal scales. Thirty-eight longitudinal series of abdominal scales.

I have a specimen of this Lizard with a three-forked renewed tail, resembling a fifth limb.

*PHELSUMA ANDAMANENSE*, *Gthr. l. c.* p. 112.

I have dissected Blyth's type of this species, and find it to be a female. There is another bottle in this museum, without a locality or name, containing males and females of a Gecko, the latter of which agrees with this species in every particular; and as the males only differ from the females in having femoral pores, it appears that the males and females are of one species with *P. andamanense*, and that this species has femoral pores like its near allies. These structures in the unnamed specimens extend along nearly the whole thigh; and the series is directed forwards to the mesial line, where it is continuous with the one of the other side; they vary in number from twenty-nine to thirty-two. The chin-plates selected by Blyth as a specific character seem to vary; for the specimen which has given rise to these remarks, and which was only lately received from the Andamans, and is also a female, has these shields differently arranged from the type, with which, however, it is identical in every other respect. It is curious to observe that the variation that occurs in this specimen is in the direction of the arrangement that prevails in the nearly allied Mauritian form, in which a pair of shields lying side by side are in contact with the chin one, which has three or four larger ones on either side of it. In Blyth's specimen, a single shield lies behind the chin-shield, with three or four shields of nearly equal size on either side of it. Three of the specimens without locality show a similar variation to the one just described; one is intermediate; and only two show the single

shield behind the chin in the decided way of the type. All these specimens have the round ear of *P. andamanense*.

Blyth does not allude to the compression of the root of the tail from above downwards, or to its being thrown into folds at nearly regular intervals (at any of which it is very liable to fracture), or to the verticillate distribution of the small tubercular-looking scales, or to the enlarged subcaudals.

Upper labials ten, lower labials seven to nine. Length of largest specimen  $5\frac{2}{8}$  inches, of which the tail measures 3 inches.

*Hab.* Andamans.

*GYMNODACTYLUS FASCIOLATUS*, Blyth ; *Gthr. l. c.* p. 116.

*Naultinus fasciolatus*, Blyth, *Journ. As. Soc. Beng.* xxix. p. 114.

Body finely granular, with numerous enlarged trihedral tubercles. Granules on tail verticillately arranged, and tubercles disposed in rings. A series of enlarged subcaudals. Tail slightly flattened from above downwards, cylindrical at the base. Scales in the middle of the belly in thirty-six longitudinal series. Nostril formed by the rostral anteriorly, by the first labial, by the nasal and a small shield between it and the labial; rostral notched and grooved, with a small plate between the two nasals. Twelve upper and eleven lower labials. Mental shield partially wedged in between two large pentagonal chin-shields, which have a small quadrangular shield on the concave external half of their lateral margins. Three rows of enlarged scales below the lower labials. Claws non-retractile; five fingers and toes, with from four to nine transverse plates on the basal depressed portion. A slight fold of skin along the side, corresponding to the line of union of the belly-scaled and dorsal granuled portions of the body (probably a post-mortem appearance as in *Puellula*, Blyth). An area of enlarged præanal scales. The femoral pores, five or six on each side, extend outwards in a line with the commencement of the thigh.

A dark brown band, edged behind with white, from the eye to the occiput, where it meets its fellow of the opposite side. A brown similarly white-edged band on the nape, with seven cross bands on the body; thirteen on the tail, the white edging disappearing posteriorly.

This species has the toes and claws of *Gymnodactylus*, and its femoral pores distributed outwards in the direction of the thighs.

Mr. Blyth considered this species closely allied to the following, from which it differs in the smaller size of the belly-scales and in the greater number of femoral pores.

*Hab.* Subathoo.

*GYMNODACTYLUS VARIEGATUS*, Blyth ; *Gthr. l. c.* p. 116.

*Naultinus variegatus*, Blyth, *Journ. As. Soc. Beng.* 1859, xxviii. p. 279.

Body granular, covered with numerous large trihedral tubercles. Tail cylindrical, the granules arranged in verticils, and the tubercles in rings. A series of enlarged subcaudals. Twenty-six longitudinal rows of rather elongated leaf-like scales on the middle of the belly.

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A fold of skin along the side, indicating where the abdominal scales terminate and the granules begin. Ten large præanal scales, and sixteen femoral pores on each side along the whole length of the thigh. Rostral notched behind and grooved, with a small hexagonal shield occupying the notch with the nasals in contact with it; nostril formed by the rostral anteriorly, first labial inferiorly, two small tuberculoid shields posteriorly, and the nasal superiorly. Ten to eleven upper labials, and eleven lower labials. Mental partially wedged in between the two large chin-shields, which form a broad suture with each other. Two rows of enlarged shields below the lower labials. Limbs and toes slender; the basal joints are not very distinct from the terminal ones, which are strongly compressed, and are provided with transverse imbricate plates below and a series of much smaller ones on the compressed phalanges.

Blyth describes the colour as "grey, beautifully spotted and marbled with black, set off with subdued white; and the lower parts whitish, freckled on the tail with black and gradually more so to the extremity, the terminal third being almost wholly blackish; above, the tail is irregularly banded. A broad dark streak bordered with whitish behind each eye, and continued irregularly round the occiput. On the back the markings appear as irregular bands, paler internally and blackish on their zigzag borders, most difficult to describe intelligibly; the head above is spotted and not banded."

Length 6" 8"; tail 3" 6".

*Hab.* Moulmein.

The walls of the nostril, the character of the rostral above, with its azygos shield impacted between the nasals, and the imbrication of the plates on the basal phalange of the toes and fingers serve, as with the other species, to connect this genus with *Pentadactylus*, from which it is separated, however, by its non-retractile claws and the absence of a claw-sheath.

#### GYMNODACTYLUS KHASIENSIS.

*Pentadactylus* (?) *khasiensis*, Jerdon, Proc. As. Soc. Beng. 1870, p. 75.

Habit similar to that of *G. variegatus*, Blyth. Body finely granular, thickly covered with small trihedral tubercles; upper surface of the head wholly granular. Tubercles on the base of the tail and numerous on the hind extremities, absent on the fore limbs. Tail cylindrical, considerably longer than the body, with round flat almost scaly tubercles of uniform size arranged in verticils, larger and irregular on the under surface. No enlarged tubercles on the upper surface of the tail, except those at the base; no large subcaudals. Two large supranasal shields behind the rostral, transversely elongated, forming a suture in the middle and the upper margin of the nostril; anterior and lower margins of nostril formed by the rostral; first labial below the nostril. Ten or eleven upper, and nine lower labials. Five large, rather elongated pentagonal shields behind the mental, with a few enlarged shields behind them below the labials. Tongue elongate, notched in front. Scales on the under surface small, rounded, and

imbricate; thirty-seven longitudinal series on the middle of the belly. Præanal pores in angular series, eleven or thirteen in number, continuous, part extending on to the thighs.

Brown, with a series of moderate-sized arrow-shaped brown spots along each side of the vertebral line, with the point directed backwards, sometimes connected together, with a series of more obscure brown spots below them on the sides; the vertebral spots are confluent on the tail, forming about eleven brown rings, which encircle it, with yellowish-brown interspaces between them; the tip black; the nape and occiput reticulated with brown; under surface dirty yellow.

Dr. Jerdon was inclined to regard this as a form of *Pentadactylus*; but its strong non-retractile claws at once separate it from that genus. It is in every respect a true *Gymnodactylus*.

*Hab.* Khasi Hills.

#### EUBLEPHARIS MACULARIUS.

*Cyrtodactylus macularius*, Blyth, Journ. As. Soc. Beng. xxiii. pp. 737, 738.

*Eublepharis macularius* (Blyth); Theobald, Cat. Rept. As. Soc. Museum, p. 32.

Habit similar to that of *E. hardwickii*. Sides and back with oval conical tubercles, widely separated from each other by densely packed minute granules; the tubercles on the head, as far forward as the anterior angle of the eye, are separated from each other by the granules. Under surface covered by more elongated imbricate scales than in *E. hardwickii*. Twenty-seven longitudinal series on the middle of the abdomen. Eleven upper and lower labials. Nostril in a single shield above the first labial, with a moderate-sized supranasal rostral. A pair of the large chin-shields behind the mental, with four smaller ones in transverse series behind it. Fingers longer and more slender than in *E. hardwickii*. Tail short, verticillated and conical, almost granular above, with eight large tubercles in transverse series on the posterior margin of each verticil; under surface with numerous divided and subdivided irregular moderate-sized subcaudals.

Colour in spirit uniform whitish, without any trace of bands. Blyth describes the coloration of this species in terms that would almost apply to *E. hardwickii*, with this difference, however, that he mentions a third black band where the hind limbs are articulated, and that the "rosy carneous interspaces" have a few black tubercles interspersed among the numerous pale tubercles. In a half-grown specimen he describes the interior of the black bands as pale and speckled with black, the margins continuing black. In his type specimen he mentions the dark line as almost having left the crown, "its blackish margins only remaining as a streak from the nostril through the eye, and continued round to join its opposite upon the occiput;" crown and cheeks mottled with dark spots more or less confluent; and the interspace from the occiput to the nape has many black tubercles. Blyth gives the length of this specimen from the snout to the vent as  $3\frac{1}{2}$  inches, and regards the specimen as a young

one. This is the length of the much-bleached specimen in this museum labelled *E. macularius*, from the Salt range, where it was discovered by Mr. Theobald, who informed Mr. Blyth that "the species attains more than double the size, and when alive is remarkable for the beauty of its prevailing rosy carneous hue." Blyth had more than one specimen before him when he wrote; and as he had already identified *E. hardwickii* (*Gymnodactylus lunatus*, Blyth \*), he was in a position to judge of the specific distinctness of the two. The type specimen, however, is the only one I have been able to discover. Theobald recognized it two years after he discovered it, and unhesitatingly referred it to *E. macularius*, although, as has been already mentioned, the specimen is of uniform colour throughout.

This is a true *Eublepharis*, with the fingers and toes and eyelids of that genus.

It is distinguished from *E. hardwickii* by its finely granular skin, much more widely separated oval tubercles, and longer fingers. In *E. hardwickii* the large tubercles on the surface of the head are not separated by smaller ones, but are hexagonal and in close apposition, producing a tessellated appearance. In *E. macularius*, however, they are widely separated from each other by the granules as far forward as the front of the eye.

This form appears to be the western representative in India of *E. hardwickii*, which is spread over the eastern half of India from Madras to the south, and through Bengal to Chittagong. Two of the museum specimens of *E. hardwickii* are from Chaibassa; and I have since received a specimen from the neighbourhood of Calcutta.

DRACO DUSSUMIERI, D. & B.; Gthr. *l. c.* pp. 125, 126.

In three specimens from Travancore the scales have no trace of keels; and in one the membrane is strongly reticulated to the sides, the external portion being darkest, and bordered by a fringe-like band of lighter streaked longitudinally. In others the inner half of the membrane is almost immaculate and light-coloured. The pouch when distended is directed forwards at an acute angle to the long axis of the body.

JAPALURA VARIEGATA, Gray; Gthr. *l. c.* p. 133.

*Japalura microlepis*, Jerdon, Proc. As. Soc. 1870, p. 76 (female).

*Japalura planidorsata*, Jerdon, *ibid.* p. 76 (young).

I have examined twenty-one specimens of this species, of all ages and both sexes, from one locality; and after dissection I find that all the small-scaled individuals are females, and that those with a double series of very slightly enlarged keeled scales on the back on either side of the mesial line, separated from it by only one row of mesial scales, but on the neck by four or five, are young. At first I was near following Dr. Jerdon in regarding the small-scaled specimens with the dorsal double row of enlarged scales as specifically distinct from the large-scaled individuals; but further materials have led me

\* Journ. As. Soc. Beng. xvi. p. 633, and xxiii. p. 210.



to an entirely different conclusion. Mr. Gammie, however, to whom I am indebted for these specimens, collected at my request the supposed females of this species without determining the point by dissection; and on examining them I find that the sex of all his supposed females is correct. The question as it now stands may be stated thus: all the large-scaled Darjeeling *Japalura* which have hitherto come under my observation are undoubtedly males of *J. variegata*, while all the females of that genus from that locality only differ from *J. variegata* in having a mere rudiment of a dorsal crest, smaller scales, and a more sparing admixture of large ones. These characters are persistent in all the specimens of the sex that I have examined from that part of the Himalaya. The conclusion to be drawn from these facts is self-apparent, viz. that the large-scaled individuals are males of *J. variegata*, and that the small-scaled ones are the females; unless it so happens that there is another species, the males of which I have not as yet obtained—a supposition which seems improbable, as all the specimens were collected within an area of a few miles.

Dr. Jerdon's small-scaled form, which he has named *J. microlepis*, has a reddish back, abruptly separated from the greenish colour of the sides by a series of somewhat raised scales.

I have received a specimen from Darjeeling agreeing with Dr. Jerdon's description of the coloration; but the lines of enlarged scales are prolonged into the red, and I cannot avoid thinking that in Dr. Jerdon's specimen they followed a similar arrangement, and that the appearance he describes may have been due to either one of two circumstances. I find in my specimen that on one side the enlarged scales do not pass on to the red surface, but they do so on the other side, where they are quite as well developed as in the adjoining green surface. On passing my finger roughly over these enlarged scales they are easily rubbed off, and no trace is left of them; and it seems probable that in Dr. Jerdon's specimens they may have disappeared from an analogous cause. Any way, however, the enlarged scales on the red surface are not so distinctly visible as on the green; and this is to be explained by the fact that they are generally pale-coloured on the green surface, and hence in strong contrast to it; while on the red they partake of a similar hue, and are thus much more indistinct. I attach no weight whatever to the red hue of the back; for this specimen agrees in every other point of its coloration with individuals which present no trace of it. It is highly probable, then, that this Lizard is endowed with the power of changing its colours quite as much as *Calotes*; and, indeed, the variations that occur in it seem only explicable by some such cause. I have carefully observed *Calotes versicolor* in confinement, and found it to undergo the most remarkable and almost sudden changes of colour while under the influence of fear or irritation; and on placing the specimens in spirit the colours are retained. It is a well-known fact, too, that the species of that genus are continually adapting their colours to the surfaces over which they may be hunting; and it is probable that they undergo chromatic changes depending on sexual causes. With these facts before us, and keeping in

view the circumstances that all the other colours of this red-backed individual are those of the females of this species, the rufous coloration of the dorsal is utterly inadmissible as a specific character, and is due in all likelihood either to a sexual or to some adventitious cause.

My specimen with the red back measures 2" 11"; tail 4" 6", imperfect. It is a gravid female.

Jerdon's *J. planidorsata*, as I have said, is founded on the young of this species, and in all probability on young females; for in the young males the dorsal crest is indicated, so that the term which he has applied to this supposed species would be inapplicable to them. They, however, have the rows of scales on either side of the dorsal line referred to by Jerdon, a character which is to a certain degree persistent in the adult, but which would be unlikely to catch the eye of the observer unless his attention had clearly been called to it in its much more interrupted character in the young. My specimens agreeing with Jerdon's *J. planidorsata* were from the same locality as the rest, and were sent as the young. Their heads have the peculiar full appearance so characteristic of that part in young Lizards; and the arrangement of the scales, large and small, and of the almost spiny scales on the nape, are the same as in the adults of *J. variegata*.

The females are much more dully coloured than the males; and even the specimen with the red back and tail has the general snake-hue of the others.

In one adult male the general colour of the body is light yellow, banded over the back and tail with broad black bars, reticulated on the limbs and sides with black; head above olive-brown, variegated on the vertex and sides with black. The band along the side of the neck is persistent in all, although not so well marked in the female. Another male with the general colour greenish, but banded and reticulated as is the previous one. In some specimens there is a distinct tendency to continue the neck-band along the side of the body, which would seem to connect this species with *J. swinhonis*, with which I am strongly inclined to consider it identical.

The females are much more darkly and indistinctly marked, and the bands between the black ones on the back are much duller and narrower than in males.

The molar dentition in the young is  $\frac{1}{2}$  to  $\frac{1}{4}$ ; and in the adults I have examined  $\frac{1}{7}$  .  $\frac{1}{7}$ . The gular pouch is black.

There is another species of this genus which I have found in the Botanical Gardens, Calcutta. It is closely allied to *J. variegata*.

The Darjeeling specimens are all from an altitude of 3500 to 4500 feet.

SITANA MINOR, Gthr. *l. c.* p. 135.

This species is not uncommon in the Central Provinces. I have received twenty specimens from Udipur, Bilaspur, Nagpur, and Bandara; and in all the hind limb extends to beyond the snout, the fore limb extending to the vent when laid backwards. If the name given to the other species really indicates its habitat, it can hardly be said to inhabit more northern parts of India than the present species.

CALOTES VERSICOLOR, Daud. ; Gthr. *l. c.* p. 140.

Darjeeling, 3800 to 4000 feet.

CALOTES MARIA, Gray ; Gthr. *l. c.* pp. 144, 145.

Garro Hills.

CALOTES MYSTACEUS, D. & B. ; Gthr. *l. c.* p. 141.

Garro Hills.

OREOTIARIS TRICARINATA.

*Calotes tricarinatus*, Blyth, Journ. As. Soc. xxii. p. 650.

*Tiaris elliotti*, Gthr. Proc. Zool. Soc. 1860, p. 151, pl. xxv. fig. B.

*Oriotiaris elliotti*, Gthr. Ind. Rept. p. 150.

? *Calotes tricarinatus*, Blyth ; Gthr. Ind. Rept. p. 144.

I have compared Blyth's type of *C. tricarinatus* with Gunther's figure and description of *T. elliotti*, and can detect nothing by which to separate them. My specimen was from an elevation of 6000 feet in the neighbourhood of Darjeeling. The type and the latter measure :—

Total length.	Tail.
in. lin.	in. lin.
5 9	4 0
5 6	3 8

TIARIS SUBCRISTATA, Blyth ; Gthr. *l. c.* p. 151.

Stoliczka has given a full description of this Lizard and of its variations, and has pointed out that it is identical with Fitzinger's *Coryphophylax maximiliani* as adopted by Steindachner in his 'Reptiles of the Novara Expedition.'

It is an arboreal Lizard common in the Andamans, and more so in the Nicobars. Dr. Stoliczka has examined 100 specimens from the latter locality, and finds them, as already said, to be identical with those from the Andamans.

UROMASTIX HARDWICKII, Gray.

I quite agree with the remarks which have fallen from Mr. Theobald\* regarding the systematic position which had been assigned to the genera *Uromastix*, *Liolepis*, and *Phrynocephalus* before he proposed to group them under one very natural family, the Uromastixidæ.

This appears to be a very common Lizard in the dry district of Agra, and also throughout the Punjab and Scind, in all of which localities they are esteemed as an article of food.

Mr. Theobald gives some interesting observations on its habits. It is a ground-Lizard, burrowing in sandy soil, and of a very gentle and placid disposition, and herbivorous. He observed that it never left its burrow till the sun was up, and that it grazed in front of it for some hours, and retreated during the intense heat of the mid-day sun. In the evening they reappear, and finally retire as the dark

\* Cat. of Reptiles in the Mus. As. Soc. Bengal, 1868, p. 39.

comes on, or earlier if it is chilly. They seem, he continues, sensitive to climatic changes and carefully close their burrows with sand, so that they escape notice unless searched for.

My largest specimen out of five measures, body  $6\frac{7}{8}$  inches, tail  $5\frac{3}{8}$ ; and all have the large black spot on the inner side of the thigh.

*CHARASIA DORSALIS*, Gray.

The verticillate arrangement of the scales of the tail is not well seen in any of the specimens in the museum, although their transverse disposition on the body is very distinct. The number of large scales along the side of the chin varies from three to five. The young is pale brown, with three broken transverse dark brown bands, one over the nape and two behind the shoulder, with about fifteen on the tail.

*Hab.* Chita, Nagpore district, Raipur, Southern India, Mysore, Bangalore, Nilgherries to 6000 ft. (*Gthr.*), and Pind Dadun Khan. Its occurrence in these widely separated localities indicates that it is generally distributed over India proper.

*TYPHLOPS BOTHRIORHYNCHUS*, *Gthr. l. c.* p. 174.

This specimen agrees in every particular with Günther's description of the type. It measures 10 inches in length. I received it from the Garo Hills.

*TYPHLOPS HORSFIELDII*, Gray.

Length  $13\frac{3}{8}$  inches.

Nazeerah, Assam.

*OLIGODON DORSALIS*, Gray; *Gthr. l. c.* pp. 210, 211.

This specimen is a female, with 188 ventrals and 37 caudals; the total length  $11'' 8'''$ , the tail  $1'' 6'''$ .

Fifteen rows of scales. Rostral wedged in between the anterior frontals, which are transversely elongated; a deep transverse crescentic groove on its under surface. Posterior frontals large, broader than long, pentangular, prolonged on to the side of the head, forming a moderate-sized suture with the loreal and præocular; vertical shield-shaped, hexagonal, broad in front, as large as an occipital, Occipitals obliquely truncated in front. The nasals are completely united; but the position of the suture is indicated above. A moderate-sized quadrangular loreal. One præ- and one postocular. Temporals  $1 \times 2$ . Seven upper labials, the third and fourth entering the orbit. Two pairs of chin-shields, the anterior pair nearly twice as large as the posterior, succeeded by two pairs of scale-like shields. Lower labials six; the first pair form a broad suture behind the mental; the second is very small, and the third very large.

General colour brown, minutely spotted with black. Rostral shield with a black centre and yellowish-brown margin. A black band on the anterior and posterior frontals and anterior third of vertical, passing downwards through the eye to the upper labials, where it expands into a large subocular black spot. A broad black band over the occipitals

to the angles of the mouth, where it is minutely punctulated with yellowish. A pale yellowish-brown vertebral band, the breadth of three rows of scales, prolonged along the body to the tip of the tail. It is interrupted at the base and near the tip of the tail by two large black spots. A longitudinal series of small black spots at intervals of four transverse rows of scales along the sides of the pale vertebral band. A narrow black longitudinal band along the sides of the body on the second and third rows of scales above the ventrals. Ventrals pale yellow, with large deep-black quadrangular spots, so confluent that black is the prevailing colour. Under surface of tail pale orange-yellow, with the black yellow-punctulated spots confined to the external margins of the caudals.

This specimen is from the Khasi Hills; and as Griffith travelled in that region and in the hilly country to the north of it, it is most probable that the specimen found in his collection came thence, and not from Afghanistan as Günther supposes.

*SIMOTES RUSSELLII*, Dand.; Gthr. *l. c.* p. 213.

*Loc.* Singhbhoom.

*SIMOTES PUNCTULATUS*, Gray; Gthr. *l. c.* p. 217.

Five specimens, all of a deep brick-red, with narrow transverse light brown bands with black margins; the lines and their margins do not exceed two scales' breadth. In some the spots on the ventrals are so numerous and confluent that the plates are almost wholly black. The ventrals of the smallest specimen, 26" 6"', in the two posterior thirds of the body, are full coralline-red, with their surfaces more black-marbled than black-spotted, and there is a distinct tendency to the formation of a white line along the angles of the plates.

Three other specimens of this species, from Darjeeling, belong to the dark brown variety, with light brown black-edged bands and with darkish underparts. In two the præorbitals are confluent.

I have three specimens from Darjeeling corresponding to Günther's variety  $\beta$ . In one there are two præoculars on one side, and one on the other.

*Brick-red variety.*

The specimens measure:—

No.	inches.	Ventrals.	Caudals.	Bands.
1 . . . .	36 $\frac{1}{2}$	210	58	34
2 . . . .	32 $\frac{3}{4}$	194	66	31
3 . . . .	32 $\frac{1}{2}$	196	56	33
4 . . . .	30 $\frac{1}{2}$	201	62	29
5 . . . .	26 $\frac{1}{2}$	195	66	30
6 . . . .	9 $\frac{7}{8}$	198	55	

None of these specimens show any tendency to division of the præorbitals.

All from an elevation of 3500 feet.

*Dark blackish-brown variety.*

	No.	inches.	Ventrals.	Caudals.	Bands.
Var. a. 1 . . . . .	1	$32\frac{1}{3}$	198	68	26
2 . . . . .	2	?	196	63	28

No. 2 is uniform dark brown, with all the scales and angles of the ventrals and caudals minutely dotted or speckled with the same colour, with twenty-eight pale brown transverse narrow black-edged bands. The posterior two-thirds of the body, excluding the tail, have the ventrals entirely black, with the exception of a narrow longitudinal line on the keel. The angle, too, of every alternate or third ventral is blacker than the intervening ones. The anterior third of the body and the caudals are squarely black-spotted; but the angles are marked in the same way as the posterior two-thirds.

No. 4. This specimen is uniform blackish brown, with twenty-seven almost black spots with still darker margins. The first two on the neck are in pairs and side by side, but those behind them are united in figures of eight placed transversely; they are very indistinct and can only be seen in certain lights. On either side of them there are faint indications of other black spots, the remnants, as it were, of the transverse bands of the other forms.

The under surface on its two posterior thirds, excluding the tail and anterior third of the body, is deep black, with a white longitudinal line along the keel of every alternate or third caudal, the angles of the intermediate ones being entirely black.

SIMOTES BICATENATUS, Gthr. *l. c.* pp. 217, 218.

Nineteen rows of scales. Loreal quadrangular, as high as broad. Two præoculars, the uppermost much larger than the one below it, and widely separated from the vertical. Two postoculars. Seven or eight upper labials; in the former case the third and fourth entering the orbit, in the latter the fourth and fifth. Temporals 2 + 2, one in contact with the postoculars. Vertical broad, nearly as large as an occipital. Occipitals transversely truncated. Ventral shields distinctly keeled. Ventrals 169-173. Subcaudals 43-63.

Colour light brown above, with three rather indistinct darker longitudinal lines, one along each side of the body on the third and fourth outer series of scales, and the other along the vertebral line. Head with the markings of the genus. Under surface yellowish, with faint indications in one specimen (Calcutta) of a brown spot near the lateral edge of each ventral, with a few brown scattered spots on the centre of the ventrals and subcaudals posteriorly. In another specimen (Garo Hills), agreeing with the former in all its structural details, the lateral spots on the ventrals are strongly marked on the two anterior thirds of the body, and on the posterior third they are so large and intense as to become confluent. Under surface of tail nearly immaculate.

The only difference that I can detect between these specimens and Günther's type of the species is the presence of two anterior tempo-

rals; but such a character is not of itself sufficient to entitle us to separate species.

*Hab.* Calcutta, rare; foot of Garo Hills.

**ABLABES RAPPUI, Gthr.**

Eight specimens of this Snake, collected in five weeks, would seem to indicate that the species is not uncommon at Darjeeling. The specimens form two varieties; and the colouring is wonderfully uniform in all. The very young specimen has a broad intensely black collar; and the rest of the upper surface is pale greyish brown. The collar is perceptible in all the adults.

No.	Length.	Tail.	Ventrals.	Caudals.
1	20 $\frac{7}{8}$ "	4 $\frac{4}{8}$ "	190	60
2	18 $\frac{5}{8}$ "	4 $\frac{1}{8}$ "	190	75
3	18 $\frac{3}{8}$ "	4 $\frac{1}{8}$ "	194	65
4	17 $\frac{6}{8}$ "	3 $\frac{7}{8}$ "	198	50
5	18 $\frac{1}{8}$ "	4 $\frac{1}{8}$ "	191	73
6	15 $\frac{4}{8}$ "	3 $\frac{5}{8}$ "	190	71
7	13 $\frac{6}{8}$ "	3 $\frac{3}{8}$ "	190	77
8	7 $\frac{4}{8}$ "	1 $\frac{5}{8}$ "	196	70

Darjeeling, 3200 to 4500 feet. From the steep slopes of the Jurta valley.

**ABLABES COLLARIS, Gray; Gthr. l. c. p. 228.**

Total length.	Tail.	Ventrals.	Caudals.
29 $\frac{5}{8}$ "	*8 $\frac{6}{8}$ "	175	88
23 $\frac{6}{8}$ "	*5 $\frac{7}{8}$ "	180	73
18 $\frac{5}{8}$ "	*3 $\frac{5}{8}$ "	177	54
15 $\frac{6}{8}$ "	4 $\frac{6}{8}$ "	180	106

This is not uncommon at Darjeeling at elevations between 3000 and 4000 feet. I have also received it from the Garo Hills.

**TRACHISCHIUM FUSCUM, Blyth; Gthr. l. c. p. 225.**

I have lately received three specimens of this Snake from an elevation of 5550 feet on the Darjeeling Himalaya.

Total length.	Tail.	Ventrals.	Caudals.
14 $\frac{2}{8}$ "	1 $\frac{4}{8}$ "	156	30
12 $\frac{1}{8}$ "	2"	161	43
11 $\frac{1}{8}$ "	1 $\frac{2}{8}$ "	141	34

The first specimen has the elongated loreal divided into two on each side. The colour is uniform metallic black, with an iridescent lustre. The third specimen has the centre of the ventrals of a pinkish brown, paling in their posterior margins to a lighter pink. The angles, however, of all of these shields are deep metallic black, and the pinkish centres are more or less speckled with the same colour.

The short, rather blunt tail of this Snake, its single posterior

\* Tails imperfect.

frontal, and thirteen rows of scales would seem to indicate that it is generically distinct from *Ablabes*.

*Hab.* Himalaya (Eastern), not uncommon at elevations varying from 3000 to 7000 feet.

*COLUBER PORPHYRACEUS*, Cantor; *Gthr. l. c.* p. 239.

Fresh specimens, in spirit, are a bright brick-red on the sides, slightly darker above. On the posterior two-thirds of the body the cross bands are not darker than the general colour; and their total number is twenty. This specimen measures 36 inches, of which the tail forms  $5\frac{1}{2}$  inches. In other individuals, from the same locality as the former, measuring  $32\frac{2}{3}$  inches, and the tail  $5\frac{1}{3}$ , the cross bands are distinctly darker than the ground-colour, and are twenty-one in number; but eight of them, in the middle and posterior portion of the body, are reduced to mere lateral spots. In another specimen, measuring 22 inches, of which the tail forms  $3\frac{6}{5}$ , the colour is brownish olive, and there are twenty-three cross bands, markedly distinct from the general colour of the snake. Eight of the cross bands before the tail are reduced to lateral spots. In these four specimens from Darjeeling Himalaya, from altitudes varying from 3000 to 5000 feet, the following numbers prevail:—

Ventrals.	Caudals.	Bands.
210	65	17
208	52	21
215	69	24
208	63	19

*COMPOSOMA RETICULARE*, Cantor; *Gthr. l. c.* p. 245.

*Coluber fasciolatus*, Blyth, *Journ. As. Soc. Bengal*, xxii. p. 409.

*Zamenis fasciolatus*, Theobald, *Cat. Rept. As. Soc. Mys.* 1868, p. 53.

Head not very distinct from neck, long and flat. Snout long and broad, rounded in front; rostral variable, considerably broader than high, or as high as broad. Anterior frontals subquadrangular or almost triangular, broader than long, less or more than half the size of the posterior frontals; posterior frontals quadrangular. Vertical longer than the occipital suture; frontal as broad as or slightly broader than superciliary margin; occipital margins meeting nearly at a right angle; superciliary margins moderately convergent, slightly concave in some. Extreme length of occipitals equals vertical and one-third of posterior frontals; obliquely or nearly transversely truncated or rounded behind. Loreal almost square, or nearly twice as long as broad, with four sides; the one in contact with the præocular nearly as long as the one in contact with the second and third labials, the other two sides being about half the size of them. Præocular large, reaching to the upper surface of the head, but widely separated from the vertical.

In some specimens from Darjeeling a small portion is separated from the third labial as a supernumerary præocular. Two first



oculars, the lower one resting on the suture of the fifth and sixth labials, and both in contact with two other elongated temporals. Temporals 2+2, or 2+3, or 2+2+3. Eight upper labials, the fourth and fifth entering the orbit; ten lower labials. Two pair of chin-shields; the anterior pair considerably larger than the posterior pair, in contact with five labials; the posterior pair separated by two small scales. Nineteen rows of scales, not elongate; those on the dorsal surface faintly keeled, those on the sides smooth. Ventrals with distinct indications of a keel, and bent up the side; anal entire; ventrals 222 to 232; caudals 68 to 76. General colour dark olive-brown, many of the scales with pale or white margins, on the intervals between a double series of vertebral dark olive-brown spots that coalesce a short way behind the neck into a vertebral series of large black figure-of-8-like spots connected with each other on either side by a faint dark lateral line of the breadth of two scales. On the third and fourth series of scales from the ventrals there is a longitudinal line of elongated black spots with light centres, connected with each other by loops, like the links of a chain. Both these and the dorsal line of spots, which commence about half an inch behind the head, disappear about the middle of the body, the lateral line being only represented by ill-defined short black lines. The white edgings, however, to certain of the scales remain, and become gradually defined, from before backwards, into transverse white or brick-red lines, with black margins, which become most marked on the hinder quarter of the trunk and on the tail. The under surface anteriorly is yellowish, especially bright on the upper labials and chin; but it is irregularly marked anteriorly with black spots, which become more diffused posteriorly until the whole of the under surface becomes almost black.

In a rather young specimen from Darjeeling the rostral is decidedly broader than high, while in a Garo-Hill specimen it is as markedly higher than broad.

One specimen has the posterior frontals confluent; and another has them united throughout half their extent, while a third has one of the anterior frontals partially divided.

In one specimen a very small portion of the first labial on one side is separated as a labial; and the inferior præocular on the same side appears to be a separated portion of the third and fourth labials, as its upper margin is marked by a slight notch in its middle, thus indicating its twofold character.

I have also indicated in the above description the variations observable in the other head-shields. The Darjeeling specimens have usually more triangular than quadrangular loreals and præfrontals, and more elongate loreals than those from the Garo Hills; but the similarity of the specimens from both these localities is so marked that it would be unjustifiable to separate them.

Mr. Theobald included *Zamenis fasciolatus* under this species. The specimen was from Southern India; but I have since received examples from the neighbourhood of Calcutta agreeing with it in every particular.

The coloration is wonderfully persistent.

My Darjeeling specimens measure:—

Total.	Tail.	Ventrals.	Caudals.
58" 0'''	9" 9'''	229	69
55 8	9 6	232	68
49 10	8 10	222	72
51 0	9 6	230	76
46 2	8 6	228	77
40 3	6 10	228	73
45 9	6 3	227	70
15 0	2 6	225	72

This species is not uncommon at Darjeeling, between 3000 and 4000 feet; and I have specimens from the Garo Hills. Blyth's were from Darjeeling; and the type of Cantor's description was from Cherra Pungee.

CYNOPHIS HELENA, Daud.; Gthr. *l. c.* p. 247.

I obtained a fine specimen of this Snake in the same locality with *D. forsteni*, var. *ceylonensis*. It measures, body 31" 4''', tail 7" 3'''. Ventral shields 244, subcaudals 77; anal entire. The fifth and sixth labials enter the orbit; and the posterior angle of the fourth all but touches it; the præocular touches the vertical. A few spots on the sides of the ventrals, the angles of which along the whole length of the body are ashy brown. The ventrals generally, with the exception of those on the anterior eighth of the body, are minutely mottled with ashy brown. With this exception, this specimen agrees in every other particular with Günther's description.

PTYAS KORROS, Reinw.

A young specimen, 13 $\frac{2}{8}$  inches, with about one inch of the tail wanting. Fifteen rows of smooth scales, without any trace of keels or any of the vertebral ones, with a pair of apical grooves. The two large loreal shields have a minute one between, evidently a separated portion of the anterior one. All the other characters agree with this species. V. 187, C. 64 (imperfect). Blackish brown above, with numerous narrow transverse white lines formed by the margins of the scales on the anterior half of the body, dull white below.

*Hab.* Nazeerah, Assam.

This museum possesses a specimen of this Snake from Darjeeling; so that its known range is from Java to the last-mentioned locality.

ZAMENIS DIADEMA, Schlegel; Gthr. *l. c.* p. 252.

Seven specimens, of different ages, from Agra, Bhurtpore, and Dholepore, have only twenty-seven rows of scales and from nine to thirteen upper labials. In the majority the præocular is divided or partially divided into two. The imperfectly divided shields appear to be characteristic of the young. Anterior frontals are larger than the posterior, and separated from the vertical by four shields, the outer of which are generally the largest. Loreals usually three; when a fourth occurs it is very small, and is evidently a separated portion of one of the other three. A ring of small shields surrounding

the lower and hinder parts of the orbit; temporals scale-like; a distinct ridge along the sides of the abdomen; anals sometimes showing a distinct tendency to division.

No.	Length total.	Tail.	Ventrals.	Caudals.
1.....	64 <sup>11</sup> / <sub>4</sub> "	13 <sup>11</sup> / <sub>4</sub> "	247	93
2.....	62 <sup>2</sup> / <sub>8</sub> "	11*	246	89*
3.....	60 <sup>5</sup> / <sub>8</sub> "	12 <sup>1</sup> / <sub>2</sub> "	245	99
4.....	58 <sup>1</sup> / <sub>4</sub> "	9*	246	64*
5.....	42 <sup>1</sup> / <sub>2</sub> "	9 <sup>3</sup> / <sub>4</sub> "	237	108
6.....	40 <sup>1</sup> / <sub>4</sub> "	8 <sup>1</sup> / <sub>8</sub> "	249	105
7.....	34 <sup>2</sup> / <sub>8</sub> "	7 <sup>1</sup> / <sub>8</sub> "	245	104

Nos. 1, 2, and 3, adults; the head is all black with metallic lustre as far as the occipitals, with or without a short narrow notched band prolonged backwards for about one inch. As age advances, the black appears to involve not only the whole upper surface of the head, but to stretch backwards even beyond the gape. In adolescents the black does not extend in front of the eye, but backwards as a broad temporal band, and it sometimes stretches backwards for about an inch as a narrow vertebral band. In the young specimens from Bhurtpore and Dholepore, not many miles to the east of Agra, there is a black spot on each shield, a broad interorbital one connected by a short narrow mesial band with a large black spot on each occipital, which are connected with the band at the anterior extremities; a short vertebral band from the occipitals, and confluent behind with the first dorsal spot; a black band through the upper loreal and præocular, and through the eye from the postoculars to the gape; an interrupted black band through the labials.

In adults the ground-colour is uniform bright pinkish red, with a dash of olive-brown, especially on the hinder parts; under surface rich pinkish; a dorsal series of round metallic black spots, with two series of longitudinal broken lines of the same colour along the side, sometimes forming round spots with smaller scattered ones between them and the angles of the ventrals on which they also occur. The under surface is sometimes covered with large black spots, but in others it is without any trace of them. In one specimen even the dorsal spots are restricted to one scale, and the ventral spots all but disappear.

In one young specimen, No. 7, the ground-colour was brownish olive, with a dorsal series of brown spots slightly edged with metallic black.

This species is highly characteristic of the dry and rather arid country of the North-west Provinces, where it appears to be not uncommon.

Although the rows of scales are only twenty-seven, the præocular is usually divided into two, and does not invariably reach the vertical; the upper labials vary from nine to thirteen; and the anal in two specimens is distinctly partially divided. There can be no doubt that all of these specimens belong to this species, which appears to

\* Imperfect.

be a very variable one, and to become much modified by age in the character of the colouring of its head and body.

This is the Snake commonly seen, along with *Eryx johnii*, in the possession of the snake-charmers of the North-west Provinces.

ZAMENIS BRACHYURUS, Gthr. Ann. & Mag. Nat. Hist. ser. 3, xviii. p. 27; Blanford, Journ. As. Soc. Beng. 1870, p. 372.

I have one specimen of this Snake from the S.E. Berars, agreeing in every particular with the description of the type, except that the colouring appears to be a little darker, which may be explained by the circumstance that it reached me shortly after its capture, whereas Günther's type had in all probability been a much longer time in spirit.

TROPIDONOTUS QUINCUNCIATUS, Schleg.; Gthr. *l. c.* p. 260.

Four postoculars on one side, and three on the other. The fourth is a separated portion of the fourth and fifth upper labials.

*Hab.* Nazeerah, Assam, Agra.

The Agra specimen was chequered with bright red and olive-green when alive.

TROPIDONOTUS STOLATUS, L.; Gthr. *l. c.* p. 267.

*Hab.* Nazeerah, Assam.

TROPIDONOTUS PLUMBICOLOR, Cantor; Gthr. *l. c.* p. 272.

I procured a specimen of this species about twenty miles to the west of Galle, in Ceylon.

The only particular in which it differs from the continental form is, that the under surface instead of being blackish is a dirty olive.

Length of body 10", tail 1" 9". Ventrals 154; subcaudals 44.

TROPIDONOTUS PLATYCEPS, Blyth; Gthr. *l. c.* p. 264.

The dentition of Blyth's type and my specimens is 14+2, enlarged teeth behind separated from each other by a distinct interval, and not 10 as stated by Günther. The enlarged teeth are two in number, and in a special sac.

In Blyth's type one specimen has three postoculars on both sides, the two lowermost ones in contact with two temporals; while the other specimen has a like arrangement on its right side, but only two postoculars and one anterior temporal on its left. My specimens show like variations of the postocular and temporal shields, as follows:—

No.	Number of postoculars.		Number of temporals anteriorly.		Temporals in contact with oculars.	
	Right.	Left.	Right.	Left.	Right.	Left.
1 . . . . .	3	3	1	2	2	2
2 . . . . .	3	3	1	1	2	2
3 . . . . .	3	3	2	2	2	2
4 . . . . .	3	3	2	2	2	2
5 . . . . .	3	3	1	1	2	2
6 . . . . .	3	3	1	1	2	2

From these observations it would appear that the normal number of the postoculars of this species is 3+3, and that the temporals vary between 1+2+3.

No.	Length.	Tail.	Ventrals.	Caudals.
1.....	30 $\frac{3}{8}$ "	8 $\frac{3}{8}$ "	180	100
2.....	32 $\frac{3}{8}$ "	9 $\frac{4}{8}$ "	200	105
3.....	28 $\frac{3}{8}$ "	5 $\frac{7}{8}$ *	195	65*
4.....	27 $\frac{4}{8}$ "	7	197	95
5.....	24 $\frac{4}{8}$ "	3 $\frac{5}{8}$ *	205	45*
6.....	17 $\frac{8}{8}$ "	4 $\frac{1}{8}$ "	200	90

The coloration of these specimens agrees in every particular with Dr. Günther's description, with this exception, that some of the specimens have the ventrals finely speckled with black spots.

Darjeeling, 3500 to 5000 feet, common.

*TROPIDONOTUS MACROPHthalmus*, Gthr. *l. c.* p. 262.

Three specimens, resembling Günther's figure and description in every respect. One of the adults, however, is a reddish brown with the dorsal series of spots pale reddish brown. In the young the anterior third has a dorsal and two lateral series of spots placed alternately to each other and connected by narrow lines enclosing scales with white margins; its head is slightly green above; and it has the arrow-shaped mark on the neck; and the posterior third of the body is coloured as in the adults.

No.	Total length.	Tail.	Ventrals.	Caudals.
1.....	43 $\frac{3}{4}$ "	8"	173	59
2.....	41 $\frac{1}{2}$ "	7 $\frac{1}{4}$ "	175	64
3.....	18 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	168	79

*Hab.* Darjeeling, Sikkim, 4000 to 5000 feet, and Salsanger, Assam.

I have since had three other specimens of this well-marked species under my observation; and in one there are only two postoculars on one side, while there are three on the other; so that we may expect to meet specimens with two postoculars. Another has only seven upper labials on one side and eight on the other; and this abnormality is evidently due to the union of the third and fourth, for the third is much larger than in normal heads. In a young specimen of this set there is a large black arrow-shaped mark on the nape of the neck, and not visible on the two other adult specimens. The yellow collar forms a narrow line before this. In the young the lateral spots are entirely black, round, and surrounded by a well-defined, pale, circular area, which is connected with the corresponding area round the spot on the opposite side by a pale transverse band.

This species does not appear to be uncommon at Darjeeling.

*TROPIDONOTUS SUBMINIATUS*, Reinw.; Gthr. *l. c.* p. 265.

In two specimens which I refer to this species there are nine upper

\* Tail imperfect.

labials, evidently resulting from the division of the third; and in one of them there are only two postoculars, resulting from the union of the two lower shields. One of these specimens is from Nazeerah, Assam, and the other from Darjeeling. All the other shields of the head are normal, with the exception of the occipitals, which are obliquely truncated behind in the Darjeeling specimen. Both have the pale area round the eye, the black streak between the fifth and sixth labials, and the black spots along the sides of the ventrals. In the Darjeeling specimen, measuring 25" 2'" in length, the yellow collar is very distinct, and the scales behind it for some distance have brilliant coral-red margins, interspersed with others narrowly margined with black, and arranged in a kind of zigzag manner, which is continued all over the body, the coral-red being lost on the posterior fourth of the body and its place taken by brilliant yellow. The general colour of the scales, however, is uniform greenish olive; and their bright colours are only seen where the scales are pulled aside, when the colours are found also to involve the skin as well.

This is a very common species in Darjeeling and also in Assam, and it is usually found at elevations of 4000 feet and upwards.

*TROPIDONOTUS HIMALAYANUS*, Gthr. *l. c.* p. 265.

Two specimens from Darjeeling agree in every particular with this species, except that one of them has a small portion of the upper anterior margin of the temporal separated as a small shield, less than one-fourth the size of the parent shield. In this specimen the quadrangular spots are brilliant brick-red, and the general colour of the anterior part of the body is greenish olive-brown. The yellowish variegation of the anterior part of the body described by Günther is brilliant coral-red in fresh specimens.

Total length.	Tail.	Ventrals.	Caudals.
24" 3'"	6" 2'"	174	86
35 3	8 6	176	86
29 9	Imperfect.	170	?

The third specimen has been lately received from the same locality, but, although it agrees with all the other characters of this species, it has only seven upper labials, the third and fourth of which enter the orbit.

*Hab.* Darjeeling, 3200 to 4000 feet.

*CANTORIA DAYANA*, Stoliczka, Journ. As. Soc. Beng. vol. xxxix. p. 208.

Body much elongate, neck very slightly contracted. Head rather flat, obtusely rounded in front; eye very small. Rostral as high as broad, pointed above; upper lateral margins concave. Single præ-frontal wedge-shaped, with its pointed extremity directed forwards in contact with the rostral. Nasals large, with the nostrils placed behind their middles; posterior frontals of moderate size, scale-like, nearly as large as the nasals; vertical broad, shield-shaped, hex-

agonal; superciliaries rather small; occipitals narrow and long and rounded posteriorly. Loreal nearly square, in contact with first, second, and third upper labials. One præocular, widely separated from the vertical, resting on the third labial; two postoculars, the lower one long, resting on the third and fourth labials. One single much elongated temporal in contact with the postoculars, succeeded by a large scale-like shield. Five upper labials, all excluded from the orbit by the oculars; eight lower labials, the front pair forming a suture behind the mental. Two pairs of chin-shields in contact with each other, the anterior pair in contact with four labials; nineteen rows of smooth, moderately elongated scales. Ventrals narrow, 268; anal bifid; subcaudals two-rowed, fifty-six. General colour dull yellow; tip of snout bluish black; a broad black band between the eyes involving the oculars, vertical, and occipitals, and a black band from behind the angle of the mouth across the occiput, involving one temporal; all the rest of the head of the same yellow colour as the body generally; forty-nine large bluish-black spots or bars on the back, contracting to a point on the sides and only passing halfway down them, sometimes confluent on the back; twelve black rings encircling the tail and occasionally confluent above and below. Teeth four in each jaw, the posterior one the largest, enclosed in a distinct pouch and indistinctly grooved.

*Hab.* Amherst, near the mouth of Moulmein river.

As remarked by Dr. Stoliczka, this species has a very marked resemblance in coloration to *Hipistes hydrinus*; and, as is well known, both of these Snakes, as also others of the Homalopsidæ, appear to mimic the true Hydrophiidæ.

I think there can be no doubt that Cope's recognition of Peters's *Hydrodipsas* as *Cantorina* is correct.

CERBERUS RHYNCHOPS, Schneid.; Gthr. *l. c.* p. 279.

This is not an uncommon species in Lower Bengal; and it appears equally to frequent fresh and salt water; for I have specimens from localities on the Hoogley ninety miles from the sea, and beyond the influence of the tides, and even as far inland as Burrakur, about 120 miles in a straight line from the sea, while there are others in this museum from the coasts of the Andaman Islands and Burmah. It has also been obtained in the Nicobars. *Ferania sieboldii* seems to have a similar power of accommodating itself to fresh and salt water, and to have even a more extended inland distribution than the present species; for Carlleyle has more than one specimen from Agra, more than 1000 miles from the sea.

The shields of the head are subject to considerable variation, and in one specimen from the Hoogley the nasal shields are confluent into one, which forms a broad suture with the rostral; there are, however, faint indications of the compressed character of this shield. In four specimens from different localities, Akyab, the Hoogley, and Amherst on the coast of Burmah, there are two infraoculars. The upper labials are also subject to variation depending on the extent of the division that prevails among them.

The Bengal and Amherst specimens have all twenty-five rows of scales. A female from the Hoogley, measuring 39" 6"', and the tail 6" 9"', contains twenty-five fully developed young; eighteen of them have two infraoculars, only five have one infraocular; one has two infraoculars on one side and only one on the other, and in another the infraocular is confluent with the lowest postocular. In none are the nasals confluent; and all have twenty-five rows of scales. The teeth are wonderfully well developed for the size of the young, which on an average measure 7" 10"' in total length, the tail measuring 1" 6"'. This female has 143 ventrals; caudals 56. In the adults of this species that have come under my observation, there has always been a narrow black longitudinal band from behind the eye along the side of the neck to the first black cross bar. In the young this band commences from the tip of the snout, and passes through the eye and further along the neck than in the majority of adults. There are also in the young a short, narrow, longitudinal black line on each side of the ventral line, on the nape of the neck, and a black spot on each superciliary. The upper labials are only as it were dusted with brown, while the chin and lower labials are spotted with black. There are a series of black spots along the side and more or less connected with the cross bars, which are very indistinct and imperfect in by far the majority. The black on the ventral aspect is very intense, and prolonged up the sides.

It is a curious fact that all these young specimens *in utero* were shedding their skins.

*FERANIA SIEBOLDII* (Schlegel); Gthr. *l. c.* p. 284.

*Homalopsis sieboldii*, Blyth, Journ. As. Soc. Beng. xxviii. p. 297.

*Feranoides jamnætica*, Carlleyle, Journ. As. Soc. Beng. xxxviii. p. 196, figs. 3 & 4.

This specimen was caught in the Jumna at Agra, and it is identical in every particular with another specimen before me from Pegu. Both have twenty-nine rows of scales, as originally described by Schlegel\*, and afterwards by Duméril and Bibron. Dr. Günther, however, restricts the number of scales to 27; ventrals 155, caudals 52.

Pupil vertical; rostral five-sided, broader than high; anterior frontals small, transversely triangular, half as large as posterior; vertical nearly as long as occipitals, longer than broad, with the lateral margins slightly concave (in both specimens), and a right angle behind; occipitals obliquely truncated or slightly rounded behind; loreal rather quadrangular, lying in the sutures of the first two or three upper labials, nearly as large as first temporal and almost touching anterior frontals (in contact on one side in Pegu specimen). Præocular narrow, high, resting on suture of third and fourth upper labials, and reaching the upper surface of the head; two postoculars, the lowest the larger, lying on sutures of fourth and fifth and fifth

\* Essai s. l. phys. Serp. tome i. p. 172.



and sixth labials. Temporals 1 + 2 + 3. Upper labials eight, the fourth entering the orbit, the seventh and eighth split into two pieces; thirteen lower labials, the sixth the largest, and the last five very small. One pair of large chin-shields, in contact with four labials; posterior shields small, scale-like, the first pair intercalated between the large anterior pair and the fifth and sixth lower labials; six transverse rows of scales between the first ventral and the last chin-shield. Thirty-four large broad black-edged spots passing down on either side to the third or fourth row of scales from the ventrals, with a triangular dark brown almost black spot between them and their extremities; the under surface and sides yellow, the former chequered with black; ground of upper surface pale brown.

I make out seven equal teeth, and one large grooved tooth behind.

There is a reference to this Snake in the Proc. As. Soc. of Bengal, March 1869, p. 105, and in the Journal of the same society, part ii. 1869, p. 196. It is described as a new genus and species, *Feranoides jannatica*, Carlleyle. In a footnote, the editor remarks that it is one of the rare instances among the Homalopsidæ of a Snake with a round pupil, and that its dentition is peculiar. However, as these remarks were founded on an imperfect drawing, their inaccuracy is not surprising.

My specimen has a vertical pupil, as stated; and the dentition is that of *Ferania*.

Mr. Carlleyle, of the Agra Museum, who procured this Snake, states that he got at Allahabad last year four living Snakes which he thinks might be classed along with this species. It is probable that this Snake may not be so rare as was at first supposed.

#### HIPISTES HYDRINUS, Cantor; Gthr. l. c. p. 287.

This species has a very strong resemblance in the character of its colouring to the Hydrophiidæ, perhaps even more so than any of the Homalopsidæ. The discoverer of this genus directs particular attention to the peculiar character of the rostral, which is marked in front by one small and two lateral depressions, the latter being placed immediately above two grooves on the under surface of the rostral, continuous with the palatal furrow. He describes the projecting anterior portion of each groove as a tubercle, while in reality it is not more than the forward projection of the fold of the rostral constituting the groove; and he regards this as the mechanical contrivance by which this Serpent, like the Hydrophiidæ, is enabled hermetically to close its mouth. The nasal is certainly not nearly twice as large as the posterior frontals, and can only be described as being smaller. The lower præocular is fully three times the size of the other. The occipitals are much broken up. There are two pairs of chin-shields as described by Cantor, the front pair very much larger and longer than the posterior one, and in contact with six labial shields. The eye, which is placed almost on the upper surface of the head, has a vertical pupil as in *Ferania*, *Cantoria*, and *Cerberus*, and is very small and is slightly external to the line of

the nostrils. There are seven teeth in the upper jaw—the first or rather short curved tooth, succeeded by three other short stout teeth, followed by two other very long slender teeth; and the series is completed by a strong grooved tooth in a special sack. The first two palatal teeth are very much longer and stronger than the others, and nearly equal the longest maxillary teeth. One peculiarity of the arrangement of the scales in this genus is their elevation, as it were, above the skin, and the circumstance that the tip of one scale, although it reaches forwards, rests on and between the middle of the pair anterior to its tip, barely reaches beyond the scale in front, and rarely touches it. The result is that there is the appearance produced as if there were a kind of pit or depression at the base of each scale, an appearance which is heightened from the circumstance that the base of each scale is black. The strong keeling of the ventrals is another peculiarity of this interesting genus.

Length.	Tail.	Ventrals.	Caudals.
21" 2'''	1" 5'''	165	27
16 0	1 1	165	23

The general colour of the lower half of the Snake is pale yellow, the upper surface being ashy grey with a few scattered spots on the neck, the back and tail with about fifty-seven or fifty-eight transverse black bands.

Two of Cantor's three specimens were captured in fishing-stakes in the sea off the coast of Keddah; the third was washed ashore at Pinang. Dr. Stoliczka\* describes this Snake as common at the mouth of the Moulmein river, especially near Amherst, and seems inclined to regard it more as an inhabitant of brackish than salt water. Its discoverer describes it as moving actively and without difficulty over the sand, and that it did not offer to bite; but Dr. Stoliczka remarks that it is very fierce—an opinion which the Burmese appear to share with him.

*PSAMMOPHIS CONDANARUS*, Merr.; Gthr. *l. c.* p. 291.

This specimen agrees with all the structural details as given by Günther, but not with his description of the colour. This specimen measures 32 inches, but not entire. The general colour may be described as brown, slightly paler on the head. As described by Günther, a yellow black-edged streak runs from the rostral along the canthus rostralis and superciliary shield on to the neck, where it becomes broader and is prolonged along the side to the end of the tail, increasing in width on the middle of the body. Another yellow black-edged line runs backwards from the rostral, along the suture of the frontals, to the anterior extremity of the vertical, where it divides, one branch running along each side of that shield to near its end, where it makes a slight outward bend, and then runs backwards through the centre of each occipital, as a yellow band on each side of the vertebral line as far back as the root of the tail. Another narrow yellow black-edged line runs from the rostral, below the loreal

\* Journ. As. Soc. Beng. vol. xxxix. 1870, p. 207.

region, to the eye and above the angle of the mouth, and is prolonged along the side to the end of the tail, covering the angle of the ventral and one half of the first row of scales; the black line defining it below can be indistinctly traced even as far forwards as the lower labials. All these longitudinal yellow lines are strongly margined with black on each of the sides, and they are equally prominent with the brown bands of the ground-colour.

I have received three specimens from Simla on the Himalaya; and a specimen in this museum is from Lower Bengal.

*DENDROPHIS PICTA*, Gmelin; Gthr. *l. c.* p. 297.

Darjeeling and Garo Hills.

*PSAMMODYNASTES PULVERULENTUS*, Boie; Gthr. *l. c.* p. 292.

The general appearance of this Snake is strongly viperine, so much so that, in roughly separating a large collection of Snakes from Darjeeling, I found when I came to examine the species critically that I had unwittingly placed the largest specimen of seven along with a fine series of *T. monticola*.

It is the subject of considerable variation in the head-plates, as is evinced by the following table:—

Total length.		Tail.		Postoculars.		Loreals.		Ventrals.	Caudals.
				R.	L.	R.	L.		
20"	3'''	3"	3'''	3	2	1	2	175	55
22	2	3	6	3	3	1	2	171	60
18	6	3	0	2	2	1	1	175	58
19	6	3	0	2	2	1	1	175	53
8	9	1	6	2	2	1	2	171	54

		Tail.		Postoculars.		Loreals.		Ventrals.	Caudals.
				R.	L.	R.	L.		
19	0	3	10	3	2	1	1	166	65
17	10	3	7	2	2	1	1	169	62

The posterior frontals are bent down on the side of the head; and when a second loreal exists it is due to the separation as a distinct shield of that portion of the posterior frontal. The three postoculars result from a portion of the fifth labial being separated as such. There are sometimes only seven upper labials, due to union of the third and fourth, the true character of the compound shield being sometimes shown by a trace of an imperfect suture\*.

There are two well-marked types of coloration, one being almost wholly black and the other light reddish brown. All the black specimens I have examined are females, and the light-coloured ones

\* I have a specimen of this Snake from the Khasi Hills with the anterior and posterior frontals confluent, but in every other respect normal. It is a pale-coloured specimen (male?).

are males. In the black specimens there is a series of orange zigzag spots along the angles of the ventrals and first scales on the anterior half of the body, and the basal margins of the second row of scales are pure white, which, however, is only visible when the scales are drawn apart. The same markings are also seen in the light-coloured specimens when the scales are pulled asunder. Some of the latter specimens are marked by longitudinal lines on the sides. A dusky line finely mottled with white and black runs along the angles of the ventrals, with a narrow pale reddish line above it corresponding to the position of the zigzag orange spots, with a dusky brown and broader band above it spotted with black and white.

This species appears to be restricted to the tropical valleys about Darjeeling; for all my specimens are from elevations of from 1700 to 1900 feet. It does not appear to be uncommon.

*DENDROPHIS PICTA*, Gmel. (Gthr. *l. c.* p. 297), var. *ANDAMANENSIS*.

Scales in fifteen series, smooth, with apical grooves; vertebral scales much enlarged, hexagonal. Ventrals keeled, 196; subcaudals 130. Head elongated; snout rounded in front. Rostral broader than high, with a deep impression in front, just reaching to the upper surface of the head. Præfrontals slightly longer than broad, rounded in front, and more than half as large as the postfrontals, which are broader than long and bent down on the sides of the head, forming a broad suture with the loreal. Vertical broad in front, narrow in its posterior half. Superciliaries large and almost as broad as the vertical. Occipitals of moderate size, rounded behind. Nostril large, between two rather prominent nasals, the posterior shield forming a suture with the anterior shield, posterior frontals, loreal, and first and second labials. Loreal narrow and much elongated, lying on three upper labials. One large præocular reaching the upper surface of the head, but not touching the vertical; two postoculars, the inferior one the smallest. Temporals 2+2+2. Upper labials nine, the fifth and sixth forming the floor of the orbit. Two pairs of elongated chin shields, the posterior the longest; the first in contact with five labials.

Grass-green above, each scale with a broad black margin, and the ventrals with a black margin externally as far as the keel. The black margins of the lateral scales so broad that when the body is at rest they produce the appearance as if a black line ran along the side of the body. A black band the breadth of the loreal, through the eye, over the inferior postorbital and upper margins of the last upper labials, to the side of the neck, where it breaks up at intervals of two rows of scales into round black spots, of which there are five along each side of the neck, behind which they enlarge into oblique black V-shaped markings on the anterior tenth of the body. A faint dark line underneath the keel. Length of body 2' 8" 6"; tail 1' 2".

Andamans.

TRAGOPS PRASINUS, Reinw. ; Gthr. *l. c.* p. 303.

In the largest specimen the fourth upper labial does not enter the margin of the lip, and the seventh and eighth are nearly completely united. On the left side there are nine labials, but the fourth is divided longitudinally ; and an arrangement similar to this occurs on both sides of the other specimen.

No.	Length.	Tail.	Ventrals.	Caudals.
1 . . . .	62 $\frac{2}{8}$ "	22"	203	170
2 . . . .	48 $\frac{7}{8}$ "	17 $\frac{3}{8}$ "	203	167

Darjeeling, 3200 feet.

The most common Tree-Snake in Bengal is *Passerita mycterizans*, which is very prevalent in the neighbourhood of Calcutta.

DIPSAS HEXAGONATA, Blyth, Journ. As. Soc. Bengal, xxiv. p. 360.

*Dipsas multifasciata*, Blyth, Journ. As. Soc. xxix. 1861, p. 114 ; Stol. J. As. Soc. xxxix. 1870, p. 119.

Scales smooth, in twenty-one rows ; a single apical groove. Vertebral series enlarged, hexagonal, elongated on the anterior part of body, short and broad behind. Ventrals 232-248 ; caudals 108-125.

One, sometimes two, præocular, reaching to the upper surface of the head ; vertical nearly as broad as long, margin straight or slightly convergent. Loreal of moderate size, quadrangular, rather higher than long or square ; two postoculars ; eight upper labials, the third, fourth, and fifth entering the orbit. Temporals irregular, varying from 1+2, 2+2, 2+3, to 3+3, with one, two, or three temporals in contact with the oculars. Eleven teeth in each upper jaw, increasing in length from before backwards, the last grooved. Uniform dark reddish brown or dark olive reddish brown above ; a faint dark line behind the eye in some, absent in others. The surface of the head is faintly and minutely speckled with brown ; under surface coral-red or pale pinkish-yellow anteriorly, deepening from before backwards. Young specimens show an irregular line of white spots margined below with black on the angle of the ventrals ; the body with a series of five black transverse zigzag lines. General colour above bright brick-red ; below white anteriorly, darkening to red posteriorly.

*Hab.* Darjeeling, 2300 feet ; Bengal ; Andamans.

Blyth's type of *D. hexagonata* is no longer in the Museum ; but some young specimens from the Andamans referred to this species agree with my specimens in all essential particulars, even to the variation of the temporals. Some of them, however, have a small defined black spot in the centre of the vertical and on each occipital, which do not occur in any of the specimens before me ; all the other markings are the same. The temporals are 3+3 and 2+3, two or three in contact with oculars. This species is separated from *D. bubalina* by its coloration, which is uniformly bright pinkish red or reddish brown, paler beneath.

No.	Length.	Tail.	Ventrals.	Caudals.
1 . . . . .	44 $\frac{1}{2}$ "	9 $\frac{1}{3}$ "	246	112
2 . . . . .	40 $\frac{1}{2}$ "	8 $\frac{5}{8}$ "	241	108
3 . . . . .	40 $\frac{1}{2}$ "	9	242	125
4 . . . . .	37 $\frac{1}{2}$ "	8	241	115
5 . . . . .	33 $\frac{1}{2}$ "	6 $\frac{7}{8}$ "	248	110
6 . . . . .	30 $\frac{1}{2}$ "	7	240	123
7 . . . . .	19 $\frac{1}{2}$ "	4	232	115
8 . . . . .	16 $\frac{1}{2}$ "	3 $\frac{4}{8}$ "	241	120
9 . . . . .	16	3 $\frac{4}{8}$ "	243	122

### Temporals and their relation to the oculars :—

No.	Number of temporals				Temp. in contact with	
	in 1st row.		in 2nd row.		oculars.	
	R.	L.	R.	L.	R.	L.
1 . . . . .	2	2	2	3	1	1
2 . . . . .	2		2		2	
3 . . . . .	2	2	2	2	1	1
4 . . . . .	1	1	2	2	1	1
5 . . . . .	2	3	3	3	2	2
6 . . . . .	2	2	3	3	2	2
7 . . . . .	2	2	3	3	2	2
8 . . . . .	2	2	3	3	2	1
9 . . . . .	3	3	3	3	2	2

If it were not for the great difference in the coloration of this species and that of *D. bubalina*, the two might very properly be regarded as one. However, there can be no doubt that Blyth's *D. nigromarginata*, which is a green Snake, is *D. bubalina*, although the lower and upper temporals on the left side are in contact with the oculars. These appear to be the only differences by which they are distinguished; but a consideration of the amount of variation in these respects that characterizes the present species shows how little importance is to be attached to such characters in variable forms.

Since writing the foregoing, I have received fifteen specimens of this Snake from Darjeeling, obtained at an elevation of 5000 feet, agreeing in every respect with those described above. The largest is 45 inches in length, of which the tail measures 9" 3". These fifteen specimens show the same variations as the foregoing ones.

Received along with these there is another Snake agreeing with Blyth's *D. multifasciata* and with the present species in all its structural characters, and to be distinguished only by its coloration. It is rich reddish brown above; but there are about seventy-one zigzag transverse black bands on the sides, from the outside of the ventral scales three-fifths down the side at regular intervals. There is a series of not very well-defined black spots on the sides of the ventrals, corresponding more or less to the transverse bands; and the sides of the ventrals generally are marbled with black, and their centres faintly clouded with minute dark specks. The surface of the head

is minutely marbled in the same way as in this species; and there is the black line behind the eye.

I am strongly inclined to regard this as simply a rare variety of *D. hexagonata*; for, as I have already observed, the number of the scales on the body, the character of the head-shields, the number of the ventrals and caudals, correspond with this species.

In other specimens of this Snake, when the scales are pulled aside, they are found to have the margins slightly edged with black; and I believe that *D. multifasciata* is only an intensified variety of this character.

The coloration of this species removes it from *D. bubalina* and *D. trigonata*.

It appears to be a very common species on the hill-sides about Darjeeling, at elevations of 3500 to 4000 feet. It occurs also in Bengal, whence Blyth obtained his type, and extends also to the Andamans.

#### DIPSAS FORSTENI, D. & B.; Gthr. *l. c.* p. 309.

I have received three specimens of this species from Gwindpur, Maunbhoom, and Doomercoonda, in Bengal; and a variety of this Snake was procured by me in Ceylon, in a densely wooded part of the island, about twenty miles to the east of Galle.

The Bengal specimens agree in every particular with Günter's description, even to the splitting of the third labial. Ventrals 259; subcaudals 112. The largest specimen is much decayed in the posterior half of the body, so that I cannot count the ventral or subcaudal shields. It measures in total length 45 inches 6 lines.

The Ceylon specimen, which measures 35 inches in length, of which the tail is 6 inches 6 lines, is distinguished from the continental specimens by the brighter colouring of the head, especially in the greater intensity of the occipital and postocular bands, the former of which has a marked yellow margin, and the latter a line of the same colour from above the eye along its upper edge. All the labials, too, have black margins. The ventrals, besides the lateral spots, have their margins spotted with brown, and are finely punctulated with the same colour on the posterior six-eighths of the trunk. The subcaudals are finely margined with brown. With the exception of these differences, it agrees in every other particular with true *D. forsteni*. It has 270 ventrals and 107 subcaudals. It may be indicated as *D. forsteni*, D. & B., var. *ceylonensis*.

#### LYCODON STRIATUS, Shaw; Gthr. *l. c.* p. 318.

I have two specimens of this Snake—one from Agra, the other from Lahore. The occipitals in both specimens are the length of the vertical, and one-half that of the postfrontals. With that exception, and that the Lahore specimen has 190 ventrals, they present no other variations in the shields or scales.

Lahore:—Body  $13\frac{1}{8}$ , tail  $2\frac{3}{8}$  inches; ventrals 190, caudals 49.

Agra:—Body  $10\frac{1}{8}$ , tail  $2\frac{1}{8}$  inches; ventrals 171, caudals 59.

Both have a white collar; and in both the white spots are more or less bifid on the sides: in the Agra specimen they are resolved into a white vertebral line on the posterior half of the body.

The white of the upper parts in life is bright yellow, fading rapidly to white in spirit; and the collar is bright canary-yellow, brighter than the rest of the colouring.

This species is another instance of how the Central and South Indian fauna stretches upwards to the north-west, even so far as Lahore.

LEPTORHYTAON JARA, Shaw; Gthr. *l. c.* p. 321.

*Hab.* Garo Hills.

PAREAS MONTICOLA, Cantor; Gthr. *l. c.* p. 327.

Total length  $22\frac{2}{3}$ , tail  $3\frac{7}{8}$  inches; ventrals 192, caudals 70.

This specimen differs from Günther's description in no lower labials entering the orbit, from which they are excluded by the lower anterior and posterior oculars. The latter is a very long curved linear shield, forming the under margin of the orbit. The upper extremity of the fourth labial comes in between the two shields, but is excluded from the orbit by them.

I have noticed a similar character in a specimen from Cherra Poongi, which had also the anterior pair of chin-shields almost confluent.

Darjeeling, 2250 feet.

Blyth's "*Dipsas monticola*, Cantor," J. A. S. vol. xxiii. p. 294, alluded to by Günther in his 'Reptiles of India,' p. 327, is *Cyclophis frænatus*, Gthr., from Assam. The only observable difference between the specimen in this Museum and that described by Günther is, that the anterior frontals are more than half the size of the posterior. It agrees, however, with the description in every other particular except that the ventrals are 158 instead of 165, and the caudals 106 instead of 95.

The only other specimens of this species are from Afghanistan, Mesopotamia, and Khasi Hills.

ERYX JOHNI, Russell; Gthr. *l. c.* p. 334.

This is a very common species in the North-west Provinces, and indeed over the dry country of North-western India.

*Hab.* Agra.

OPHIOPHAGUS ELAPS, Schleg.; Gthr. *l. c.* p. 341.

Length of specimen 8 ft. 2 in.; ventrals 243, caudals 85.

This Snake does not appear to be uncommon in Sikkim and Assam, and is of not unfrequent occurrence in Burmah. The largest specimen that has come under my observation is one, in length 11 ft.  $9\frac{6}{8}$  in., from Debrooghur, Assam; but it is a stretched skin. This specimen in life was 10 feet long. After having been pierced with a spear, and the spear had been removed, it became as lively as ever, and kept up a running fight for 30 or 40 yards. In



Assam these Snakes occur on the grass slopes at the foot of the hills, and are called by the Assamese "Dabi Serp," and by the Cucharees "Garanga Sim." They are said to be very irascible during the breeding-season, and to charge without any provocation.

This Snake is not uncommon in Eastern Bengal; and I have obtained it close to Calcutta—one from the Royal Botanic Gardens, and another from the neighbourhood of Mntlah. I have heard of its occurrence at Raneegunge, and have seen a specimen from the Jessore. It is in all probability the "Black Cobra" of Hooker; and there can be little doubt that the Cobras constantly killed in the Sikkim Himalaya of fabulous dimensions are of this species. I have it from Darjeeling, at an altitude of 6000 feet.

*BUNGARUS CÆRULEUS*, Schneid. ; Gthr. *l. c.* p. 343.

This specimen is uniform black above, pale brown beneath, and highly iridescent.

Length  $23\frac{7}{8}$ , tail  $3\frac{5}{8}$  inches; ventrals 225, caudals 55.

*Hab.* Nazcerah, Assam, and from Agra.

This is the most generally prevalent poisonous Snake in the north-west provinces of India. It is rare in the neighbourhood of Calcutta and Lower Bengal, where the natives do not know it as a poisonous Snake. In its young state it has a considerable resemblance to *Iycodon aulicus* in the general character of its colouring; and I have received specimens of the latter Snake sent to me as examples of this species.

*CALLOPHIS MACCLELLANDII*, Reinh. ; Gthr. *l. c.* p. 350.

This specimen belongs to Günther's variety  $\gamma$ , forming twenty-two rings, each dilating on the ventral surface into a large black spot, and each of these being separated by another isolated black spot.

No vertebral line.

Length  $16\frac{3}{8}$ , tail  $1\frac{1}{8}$  inches; ventrals 219, caudals 33.

*Hab.* Nazcerah, Assam.

*PLATURUS FISCHERI*, Jan; Gthr. *l. c.* p. 356.

The specimen which I provisionally refer to this species has nineteen rows of smooth scales round the fore part of the trunk, in longitudinal series, and 235 ventrals; there is no azygos shield between the posterior frontals; and in all of these characters it agrees with this species. But on comparing the head with Günther's drawing, I find that the anterior frontals in my specimen differ from it in being long and pointed anteriorly, and considerably larger than the posterior pair, and in the vertical being proportionally larger than in *P. fischeri*, and the occipitals longer and more pointed. It has one præ- and two postoculars; and the third and fourth labials are below the eye. Two pairs of large chin-shields, the posterior pair with a large scale between their posterior extremities. It also differs from *P. fischeri* in having fifty-six black rings round the trunk instead of thirty-six; but I do not attach much importance to this, as *P. scutatus* shows about an equal variation: yet,

at the same time, Günther stating that his eight specimens show the same assemblage of characters as laid down in his description, the occurrence of fifty-six rings in my specimen suggests that this multiplicity is either due to greater age (for it measures 49 inches in length) or to variation. The head, too, is wholly black, with the exception of a yellow band from the posterior margin of one eye to the other. The upper surface is olive-green, and the sides and belly rich dark gamboge-yellow, and the fifty-six rings are intensely black, and the scales generally have a very bright shining lustre.

Fallahs Mullah, a tidal stream, Calcutta.

If this form should prove to be new, I would indicate it as *P. affinis*, n. sp.

*HYDROPHIS GRANOSA*, n. sp.

*Hydrophis gracilis*, Shaw; Theobald (in part.), Cat. Rept. As. Soc. Mus. 1868, p. 68.

Anterior part of the body moderately slender; head rather tapering and laterally compressed. Two labials below the eye; third labial widely separated from the nasal by the second labial, frontal, and præocular; one large anterior temporal, with two smaller ones behind it; one præocular and one postocular; one pair of round scales like chin-shields not in contact with each other or with any of the labials. Forty-three rows of scales round the neck. Scales small, with a prominent keel slightly dilated at either extremity; the scales are elongately leaf-shaped and markedly imbricate on the slender portion of the body, but on the thick portion behind they are truncated at their tips and less imbricate; the scales immediately behind the head, and the shields of the head generally, and the scales on the lower jaw, are covered with minute rounded granular tubercles, which are especially numerous on the rostral. The ventrals are twice the size of the neighbouring scales, and are of a uniform size throughout, and those of the thick part of the body are not split; each carries from two to four small tubercles, usually arranged in pairs, two large ones anteriorly, and two smaller ones posteriorly, and external to the latter. Six anal shields, the outer one very large, and equal to two of the others in size. Ventrals 105. Terminal scale of the tail small. Fifty-two non-confluent black bands on the body, extending down the sides, but not reaching the ventral surface; eight black bars on the tail. The ground-colour in this spirit-specimen is pale yellowish. It was obtained at the Sand Heads.

The number and character of the scales of this Snake and the scale-like nature of its chin-shields seem to indicate that it is closely allied to *H. stokesii*, a species which I have never seen. By some of its characters it is also allied to *H. cærulescens*, Shaw.

*HYDROPHIS JERDONII*, Gray; Gthr. l. c. p. 362.

Total length  $38\frac{7}{8}$  inches, tail  $3\frac{1}{2}$ . In this specimen there are forty

black cross bands passing right round the body ; but, besides these, there are occasionally aborted bands, the remnants of which are found either as large black dorsal spots or imperfect bands on the belly half. There is a black spot on the back of the neck between the first band that passes across from the angles of the mouth and the one behind it. In every other particular this specimen differs in no way from typical *H. jerdonii*.

Pooree.

This specimen is much infected with Cirripedes and Tubularious Zoophytes, which seem to indicate that it is not of very active habits.

*HYDROPHIS CYANOCINCTA*, Daud. ; Gthr. *l. c.* p. 367.

Length (total)  $50\frac{3}{8}$  inches, tail  $4\frac{2}{8}$ .

Pooree.

*HYDROPHIS CHLORIS*, Daud. ; Gthr. *l. c.* p. 370.

This specimen has the third labial not in contact with nasal on one side ; but on the other, throughout, the third labial is broadly in contact with the nasals, as a small labial has been formed between the first and second, thus converting the latter into a third labial. If this arrangement had occurred on both sides, it might, perhaps, have given rise to another synonym for this species.

Hydrophids are frequently cast ashore on the Pooree coast ; but they soon die, even when every care is taken of them.

*HYDROPHIS LINDSAYI*, Gray ; Gthr. *l. c.* p. 371, var. A.

*Aturia lindsayi*, Gray, Zool. Misc. p. 6.

*Hydrophis lindsayi*, Gray, Viper. Snakes, p. 50.

*H.* "*gracilis*," Shaw ; Günth. Ind. Rept. p. 371 Theobald (in part.), Cat. Rept. As. Soc. Mus. p. 68.

Head very small, not distinct from the neck, which is very long and whip-like ; the slender portion of the body equals more than one-third of the total length. The rostral pentagonal, as broad as high, the lower margin with a median process and a concavity on either side of it ; nasals oblong, with the nostrils in their posterior half, in the angle formed by the posterior and external margins ; frontals longer than broad ; vertical shield-shaped, very slightly smaller than a supereiliary ; occipitals much elongate, rounded posteriorly. One præocular and one postocular ; two large temporal shields alongside of the occipital. Third labial not in contact with the nasal ; second labial very large ; first lower labials forming a broad suture behind the mental, and succeeded by a pair of pentagonal chin-shields forming a broad suture and succeeded by a triangular pair widely divergent behind. Scales imbricate, in twenty-eight series round the neck, each with a prominent tubercle near the tip. Ventral shields on the slender portion of the body twice as large as the surrounding scales, smooth anteriorly, but with two tubercles when they reach the thick part of the body, where they

are not much larger than the neighbouring scales; few of them are longitudinally divided. Ventrals 417. Anals four, the outer pair very large. Sixty-one black bands on the body; those on the neck confluent with the black under surface of that part of the body; those on the back extending only on to the side. Head black; tail with seven black bars.

General colour (in spirit) above pale olive-grey; dirty yellow on the sides and under surface, except the slender part of the body.

Length 38" 6<sup>'''</sup>, tail 2" 7<sup>'''</sup>.

With the exception of the absence of light keeling on the dorsal scales, this specimen agrees in every particular with this species.

*HYDROPHIS CORONATA*, Gthr. *l. c.* p. 372.

This specimen is 42" 3<sup>'''</sup> in length, tail 3" 9<sup>'''</sup>. Twenty-one rows of scales round the neck; imbricate, those on the back keeled, and those of the side with a small tubercle. Ventral shields about twice as large as the surrounding ones, with two minute tubercles on each; the rostral is much broader than long; and the third labial is not in contact with the nasal. One præocular and postocular; three large tubercles along the side of each occipital; two pairs of chin-shields in contact with each other. There are fifty-eight complete blackish rings round the trunk, and eight black bars on the tail. In this specimen there are six anal shields, the two outermost ones being the largest; but in a specimen measuring 17" 8<sup>'''</sup>, tail 1" 10<sup>'''</sup>, there are only four anal shields, the external ones being much larger than the others. It has, however, only forty-seven complete black rings on the trunk, and nine black bars on the tail. The coloration of the head and of the ventral surface of the long whip-like anterior portion of the body is the same as described by Günther.

Both of these specimens are from a tidal stream in the vicinity of Calcutta.

*HYDROPHIS CANTORIS*, Gthr. *l. c.* p. 374.

*Hydrus gracilis*, Cantor, Mal. Rept. p. 130 (not synon.).

? *Liopola fasciata*, Gray, Zool. Misc. p. 60 (young) (not Schneid. nor Shaw).

*Hydrophis gracilis*, Shaw; Theob. Cat. Rept. As. Soc. Mus. 1868, p. 68.

The specimen in this museum catalogued by Theobald as *H. gracilis*, Shaw, is undoubtedly of this species. The upper jaw hardly projects beyond the lower one; and the rostral is prolonged backwards, and is not cutting in front. The third labial is in contact with the nasal; and there are two large temporals alongside of the occipital, one præ- and one postocular, and two pairs of chin-shields, in contact with each other. There are twenty-three rows of scales round the neck, which is very slender and nearly one-half of the length of the body. In the narrow part of the body the ventrals are twice the size of the neighbouring scales; and in the thick portion they are

split into two, and carry two, three, or four tubercles. The tubercles on the scales of the slender portion are very indistinct, but in the thick part they become distinct, and are usually two in number. Ventrals 456; six small anal shields. Total length 51" 6"; tail 4" 3". Twenty-eight blackish rings round the slender portion of the body, confluent on the back, and connected on the under surface by the black ventral shields. Compressed part of the body uniform yellowish (spirit specimen); but the general colour is much faded; the black rings, however, on the anterior half are well marked.

This fine specimen was obtained at the Sand Heads at the mouth of the Hughli.

ENHYDRINA SCHISTOSA, Daud.\*

Distinguished from its very near kinsfellow, *E. valakadyen*, by its narrow and more elongated head and head-shields, its longer gape, the smaller and more pointed character of its scales, which are also not nearly so strongly carinated as in that species, their greater number, and its relatively shorter and narrower tail.

Body elongate, compressed; head narrow and elongate, one-third the length of the tail; nasals large and elongate; fourth labial below the eye; one postocular united to the fourth labial; mental shield very narrow and much elongated, as long as the first labials; fifty to sixty longitudinal rows of scales round the neck. The scales are rather small, elongate, pointed, and leaf-shaped on the anterior third of the body, broader and more round at their points in the middle third, and still more circular on the last third; scales on the throat, neck, and a considerable portion of under surface of the anterior part of the body narrow, much pointed and elongated, and perfectly smooth, without any trace of tubercles. The shields of the head are quite smooth; but the scales of the back are keeled and slightly imbricate, while those on the sides are feebly keeled, hexagonal, and scarcely imbricate. The tail is about one-tenth the length of the body, and is not so deep as the preanal portion of the body. Uniform dark olive-green on the dorsal surface, paling to pale greenish yellow on the sides, and to white lower down on the sides and on the belly.

Length, total 40" 1", tail 4".

*Hab.* Gopalpore.

From the strong resemblance of this species to *E. valakadyen*, it is probable that the two have long been confounded. To Dr. Stoliczka belongs the credit of having again called attention to the characters distinguishing these two forms, which appear to be quite distinct. I have before me for comparison a specimen of undoubted *E. valakadyen*, of smaller size than this specimen; but, notwithstanding, the scales of the former are much larger every way, and broader and truncated at the tips, than in the latter; so that age will not account for such differences. Moreover the form and size of the head of *E. schistosa*, compared with *E. valakadyen*, are so pronounced that

\* See Journ. As. Soc. 1870, p. 213.

they at once strike one as characteristic features of the Snake; these, combined with the characters given in the above diagnosis, are sufficient to separate them.

I have two specimens of *Enhydrina* from the Botanical Gardens,—one with the elongate head and rather long gape of *E. schistosa*, with the upper surface of the head granular, with forty-seven rows of scales 2 inches behind the neck, the head being one-third the length of the tail; the other specimen has the short granular head of *E. valakadyen*, with forty-nine rows of scales round the neck 2 inches behind the head.

TRIMERESURUS ERYTHRURUS, Cantor; Gthr. *l. c.* p. 386.

Sulsaugur, Assam.

TRIMERESURUS CARINATUS, Gray; Gthr. *l. c.* p. 386.

Garo Hills.

TRIMERESURUS GRAMINEUS, Shaw; Gthr. *l. c.* p. 385.

Scales in twenty-one series, those on the head smooth or faintly keeled; an azygos shield between the supranasals. Bright yellow-green, darkest on the back, and greenish yellow on the head; under surface bright greenish yellow, with a faint greenish-yellow line along the outer line of scales, and continued on to the head below the eye; tip of tail brick-brown.

Length.	Tail.	Ventrals.	Caudals.
23" 3'''	3" 3'''	169	60 (♀)
30 6	5 6	167	58 (♀)
30 9	5 9	173	65
19 3	3 6	171	68

In the last two specimens the lines along the side are very bright, the lower one bright brick-colour, involving one-half of the first body-scale, the other pure white, covering the other half, and the half of the second body-scale, becoming narrow on the tail, and disappearing about its middle, or, as in the case of the young one, becoming broken up into a series of red and white lateral spots; upper surface of the tail brick-red.

This appears to be a common Snake in the tropical valleys below Darjeeling, where it is usually found at an elevation of 2000 feet.

TRIMERESURUS MONTICOLA, Gthr. *l. c.* p. 388.

*Parias maculata*, Gray, Ann. & Mag. Nat. Hist. 1853, xii. p. 392.

*Trimeresurus andersoni*, Theob. Cat. Rept. As. Soc. Museum, 1868, p. 75.

Theobald's *T. andersoni* was founded on a solitary specimen from an unknown locality, with twenty-five rows of keeled scales and an azygos shield between the supranasals. In specimens, however, of this species from Hotha (4500 feet), Western Yunan, the azygos is sometimes present, and absent in others, and the scales are in

twenty-three rows. Two specimens before me have twenty-four rows of keeled scales, two others have twenty-five, and three others have twenty-three. One of the specimens with twenty-three is from Darjeeling; and the two others are from Cheera Punji, Khasi Hills.

*T. andersoni*

In the specimens from the latter locality one has a pair of small shields between the supranasals, and another has three small shields intervening between them. Another specimen from Darjeeling, with twenty-five rows of scales, and measuring 28 inches 6 lines, tail 3 inches 2 lines, has a pair of shields between the supranasals, and three small shields in front of the former, evidently resulting from division of the supranasals themselves, and of the azygos also. It is a female, with ventrals 146, caudals 35. The coloration is in every way the same as described by Günther. I observe in Günther's figure of this Snake that a small azygos shield is impacted between the supranasals and rostral; and if this shield were a little enlarged, and were completely to separate the supranasals, his figure would agree in every respect with my seven specimens from Darjeeling, all of which have an azygos shield between the supranasals, and from twenty-three to twenty-five rows of keeled scales. The occurrence of twenty-four rows in two of the specimens leads to the apparent limit of variation, twenty-five. It is easy to understand how the azygos may become broken up. The coloration of all these specimens (twelve), including *T. andersoni*, is identical in every respect; and, as Günther observes, the males are blackish ash, and the females and young pale brown. The aged females, however, become dark brown. The Y-marking on the neck is present in all. The adults measure 4" 9" in circumference. The smallest specimen measures 6" 9", of which the tail is 1"; and the largest 32" 3", tail 4" 10". The ventrals vary from 140 to 148, caudals from 36 to 48.

*Hab.* Darjeeling; Cheera Punji, Khasi Hills; Hotha, Yunan, N. China, 3520 to 5000 feet.

With these facts before us, the scales may be said to vary from twenty-three to twenty-five rows; and the supranasals may be regarded as varying from a minute shield impacted in front of them, to a perfect shield, wholly separating them, or breaking up in some cases into two or five supranasal shields. These differences may be regarded as indicating special varieties; but it is very questionable whether they are invariably communicated from the parent to its offspring. I am inclined to think they are not, for I have on more than one occasion, when examining young Snakes that I have removed with my own hands from the mother, found them exhibiting variations in their head-shields; and the occurrence at Darjeeling of specimens of this Snake with twenty-three rows of scales, while the majority have twenty-five rows, is conclusive proof that this character is not one characteristic of a local form. It is curious to remark that all the specimens that have hitherto yielded twenty-three rows of scales have not been adults, and that all my largest specimens yield the greatest number of scales round the neck; and in the light of such a consideration it seems possible that mature forms from Cheera Punji will yield twenty-five rows of scales.

TRIMERESURUS CONVICTUS, Stol. Journ. As. Soc. Bengal, xxxix. p. 224.

This species is very closely allied to *T. monticola*; but, as Dr. Stoliczka observes, the scales are slightly broader and more rhombic. I presume he refers to the adults of that species; but the specimen to which the name *T. convictus* has been given is evidently not a full-grown individual; for it only measures 11" 3''' (the body), and 1" 8''' (the tail). Now in the young of *T. monticola* I observe that the scales are generally broader than in the adults, and the keeling is very indistinct. Moreover the head does not appear to me to be higher than in *T. monticola*; but, as Dr. Stoliczka remarks, it is slightly more elliptical than in *T. monticola*: perhaps, however, this appearance may be heightened from the circumstance that it is nearly severed from the body. There is an azygos shield more in front than between the supranasals; and the scales of the head are larger than in that species. The tail is certainly shorter than in *T. monticola*, and the number of scales fewer.

The single specimen of this species was obtained at an elevation of 2400 feet, on the Western Hill, Penang.

HALYS HIMALAYANUS, Gthr. *l.c.* p. 393.

One specimen before me has only twenty-one rows of strongly keeled scales round the middle, only 154 ventrals, and 45 caudals.

Dr. Stoliczka informs me that this species is far from uncommon to the north-east of Simla.

ECHIS CARINATA, Schneid.; Gthr. *l.c.* p. 397.

This Viper is common in the country about Agra and Delhi, and extends as far east as Singhbhoom, in Bengal, and to the south as far as Madras. One specimen before me has the superciliary region scaly and 166 ventrals, while another, from Singhbhoom, has also a scaly superciliary but only 138 ventrals. This large number of ventral shields induces me to regard the African and Asiatic snakes as one.

This Viper makes a curious, prolonged, almost hissing sound by rubbing the sides of the folds of its body against each other. The head remains almost fixed in one position, and the body is made to move in folds in such a way that the sides are rubbed against each other in the direction of the scales. When we come to examine the latter structures it is at once apparent how the sound is produced. We discover that the first row of scales above the ventrals are perfectly smooth, that the next one or two rows above these are strongly keeled, and that in the three or five following rows the keel is very strongly developed and toothed like a saw. These eight lateral rows of scales are placed obliquely on the body, with their tips directed downwards and backwards, while the other scales are placed longitudinally. By this arrangement the serrated keels of the scales are made to pass over each other obliquely instead of in a straight line,



which would have been productive of little or no noise, whilst the oblique rasping of these little saws against each other produces a noise that can be heard as well as the hiss of any large serpent. The noise can be produced after death by rubbing the sides of the body against each other in the direction of the scales. During life this handsome little Viper is always engaged in rubbing its scales together when disturbed. It is very fierce, and strikes with great vigour.

It is very deadly and is the cause of much mortality among the field-labourers of the north-west of India, where it appears to be not uncommon.

*RANA KUHLII*, Schleg.; Gthr. *l. c.* p. 404.

One specimen of this Frog exists in the Museum. Unfortunately no locality is given; but it is probably either from Ceylon or Burmah, in all likelihood from the former locality. It has not, however, the transverse plaits of the skin of the back characteristic of Günther's var. B from Ceylon, but is almost smooth above—a circumstance that may be accounted for by age, as the body measures 2'' 7'''. The lower part of the leg and tarsus are roughly tubercular. It agrees in every other character with Günther's description of the species; and if the absence of the transverse folds and small tubercles is not attributable to age, it verifies Günther's statement that the transverse folds of the skin are not a constant character, any more than the mandibulatory fangs, which are well developed in this specimen.

*RANA TIGRINA*, Daud.; Gthr. *l. c.* p. 407.

Agra.

*RANA FUSCA*, Blyth, Journ. As. Soc. Bengal, xxxiv. pp. 719, 720; Günther, *l. c.* p. 403; Theobald, Cat. Rept. As. Soc. Museum, p. 79; Günther, P. Z. S. 1868, p. 478.

Head triangular, rather broad behind; snout rather short, pointed, and rounded in front, truncated in the aged adult; no canthus rostralis; sides of snout broadly rounded, and shelving outwards. Nostrils oval, much nearer the extremity of the snout than the eye. Width between the eyelids slightly greater than the distance between the eye and the nostril. Tympanum indistinct in the young, much smaller than the eye, almost hidden in the adult, reduced to a small yellowish disk in the centre of the wide aural, depressed. Vomerine teeth six to nine, strong, on two prominent rather short oblique ridges, on a line with the inner anterior angle of the choanæ, converging behind, but widely separated. In adult specimens a strong transverse osseous ridge behind the choanæ. Tongue cordate. Two very large fang-like apophyses on the lower jaw, directed backwards, and received into a groove in the upper jaw. Rostral portion of snout prominent, overlapping and trenchant. Lower jaw transversely truncated in adults to receive it. No vocal sacs. A strong fold from the eye over the tympanum to the shoulder; posterior third of upper eyelid tubercular. Skin smooth above in adults, slightly tubercular in other and

younger individuals, especially on the sacrum; sides tubercular in adults. Limbs rather short and stout. The first finger is slightly shorter than the fourth, and the second is shorter than either; the third is about one-third longer than the fourth. From the vent to the metatarsal tubercle is longer than the body. A fold along the metatarsus, and a fringe along the fifth and first toes. A flattened oblong metatarsal tubercle. Foot broadly webbed, the membrane reaching to the extremities of all the toes; fingers and toes slightly dilated at their tips.

Uniform dark brown (spirit specimen) above in adult, with faint dark marbling on the back of the thighs, and a blackish line along the supratympanic fold; sides paler, under surface yellowish; lower lip with from two to three broad black bands. In younger specimens the marbling or reticulation on the thighs and the barring on the lips are well marked. In some specimens the upper surface is irregularly spotted with dark blackish brown; and the majority of specimens show broad dark bars of the same colour on the limbs, becoming indistinct with age. Blyth mentions a mesial white spot on the lower jaw, corresponding to the symphysis and to the interval between two of the blackish bars. Three out of six have a yellow vertebral line.

This species appears to be closely allied to *R. tigrina* in its vomerine ridges and in the general form of its body, but approaches *R. kuklii* in its fang-like apophyses, almost hidden tympanum, and elongate metatarsal tubercle.

Blyth states that it is common in the Tenasserim valley, where it is eaten by the Burmese.

Length of body.

6" 4'''

5 5

4 11

4 6

3 8

3 0

Length of hind leg.

8" 11'''

8 5

8 9

6 11

5 11

5 1

#### RANA LIEBIGII, Günther.

*Megalophrys gigas*, Blyth, Journ. As. Soc. Beng. xxii. p. 410, xiii. p. 299, and xxiv. p. 717.

*Rana liebigii*, Gth. P. Z. S. 1860, p. 157, pl. 28. fig. A.

*Hylorana erythræa*, Schlegel; Theobald, Cat. Rept. As. Soc. Museum, p. 84.

Blyth's name has the priority; but it is so inappropriate that I prefer to retain Günther's, for which this much can be said, that it will not give false notions regarding the size of a Frog which does not attain to one-fourth of the dimensions of *R. fusca* or *R. tigrina*.

Blyth's type is 4" 6''' in length, the hind leg 7" 3'', and the foot from the heel 3" 4''; the breadth of the head 2". The largest specimen, referred by Theobald to *H. erythræa*, is Blyth's type of

*M. gigas*, as is proved by comparing it with Blyth's description. It agrees in every particular with Günther's description. Blyth observes that the young have the head proportionally less broad than in the adult, which is well illustrated by his specimens.

*Hab.* Sikkim Himalaya.

*RANA CRASSA*, Jerdon, Journ. As. Soc. Bengal, 1853, xxii. p. 531; Theobald, Cat. Rept. As. Soc. Museum, p. 79.

This species, as observed by Theobald, is closely allied to *R. tigrina*, from which it is distinguished by its more obtuse and shorter snout and conspicuously broader occiput. Its metatarsal tubercle is proportionally larger, stronger, and more crescentic than in *R. tigrina*, resembling the shovel-shaped tubercle of *Pyxicephalus*. Dr. Jerdon regards it as allied to *R. kuhlii*,—a comparison which would seem to indicate that he had never identified *R. kuhlii*; for *R. crassa* has the naked tympanum of *R. tigrina*, wants the fang-like apophyses of *R. kuhlii*, and has the strongly developed vomerine ridges of the former species.

Snout rather short, and not so pointed as in *R. tigrina*. Occiput broad, the breadth across the gape being longer than the head. Loreal region concave, shelving outwards. Nostrils oval, nearer the snout than halfway between the snout and the eye. Tympanum distinct, smaller than the eye. Eustachian tubes large, larger than the choanæ. Vomerines 12 to 15, on two oblique prominent ridges from the anterior inner angle of the choanæ, converging behind, but separated by a moderate interval. Tongue of moderate size, cordate. No fang-like apophyses on the lower jaw. Back with short longitudinal folds; a few tubercles on the sacral region. A fold from the eye over the tympanum to the shoulder; a fold between the eyelids, and a very rudimentary one along the inside of the tarsus, and a fringe along the fifth toe. Hind limbs stout, rather short, the distance between the vent and the metatarsal tubercle being the length of the body or a little less. Toes fully webbed, the membrane hardly reaching to the extremity of the fourth toe. A prominent crescentic sharp-edged tubercle at the base of the first toe. Fingers and toes with the same proportional length as in *R. tigrina*.

Brown above (spirit specimens), spotted with darker in the same way as in *R. tigrina*. Under surface yellowish, obscurely spotted on the chin and throat; a narrow brown longitudinal streak on the same region in youngish males. Lips barred with blackish; vocal sacs of males dusky externally. One out of four with a vertebral band.

	Body.	Hind limb, to meta- tarsal tubercle.
Length of large female . . . . .	5" 2'''	5" 1'''
"    "    male . . . . .	3 9	4 0
"    "    female . . . . .	3 7	3 7

Dr. Jerdon describes the body as greenish above, with dusky markings, and states that the Frog was rare—found in a few tanks in the Carnatic. The specimens of this notice are from Ceylon.

**RANA GRACILIS**, Wieg. ; Gthr. *l. c.* p. 409.

This species appears to be widely distributed from Central India through Bengal, Assam, Arakan, Burmah, and Tenasserim, as far south as Penang. I have not seen any specimens from the Nicobars or Andamans, as the Frogs from these localities referred by Dr. Stoliczka to this species appear to be quite distinct. Dr. Stoliczka mentions that it does not hesitate to take to the sea or brackish water, and that it is a true littoral species, overlooking, however, the fact that it is widely distributed over Central India, Bengal, and Burmah, far removed from the sea. The probability is that he had the Andaman and Nicobar species in view when he made the foregoing generalization, and not true *R. gracilis*.

**RANA CYANOPHLYCTIS**, Schneid.

This species is very common in the Nagpur district, Central India, and it occurs also in Orissa and in the neighbourhood of Calcutta, but is less numerous in the Malayan peninsula, according to Günther.

**PYXICEPHALUS BREVICEPS**, Schneid. ; Gthr. *l. c.* p. 411.

*Pyxicephalus fodiens*, Jerdon, As. Soc. Journ. xxii. p. 534.

This handsome species, of which I have received twenty-one specimens from Agra, where it appears to be common, has been found hitherto only in the Carnatic. In four the marbling of the back is confluent over the mesial line of the back as a vertebral black line, connected, however, with the reticulations. In others there is a tendency in the lateral reticulations to form a black lateral band from behind the eye. Out of twenty-one specimens, only nine show the white vertebral line. The black spots on the back are not, as a rule, so distinct as in Günther's figure, nor have they the white border; and in some they almost disappear, while in others they are converted into rings, enclosing a pale centre of the same colour as the general surface of the body. In the specimens with no trace of a vertebral line the spots are all but obsolete.

Dr. Jerdon's *P. fodiens* is simply *P. breviceps* without a pale vertebral line.

**XENOPHRYS MONTICOLA**, Gthr. *l. c.* p. 414.

*Xenophrys gigas*, Jerdon, Proc. As. Soc. Bengal, 1870, p. 85.

I have received seven specimens of this beautiful Frog from Darjeeling; and have removed another uninjured specimen from the stomach of an example of *Tropidonotus macrophthalmus*. The largest specimen measures 2" 8''' in length, the hind limb 4" 1''; the smallest is 1" 5''' long, and its hind limb 2" 4'''. There are two varieties of coloration, the one a light and the other a dark brown. They agree in every particular with Günther's description; so that I shall merely indicate one or two points which appear to be characteristic of the species, and which Günther could not have been expected to notice

in his young specimen, measuring 19 lines. The first peculiarity is that the back is covered over with very minute (microscopic) tubercles, that tend to arrange themselves in a linear manuer. A series of these tubercles constitute the outline of the triangular brown spot on the crown, and also of the Y-shaped mark on the nape, and of other anastomosing lines on the back behind it. There is usually a line of them running along the side of the back. All of these lines have a beaded appearance, and are very fine, and not discernible in some specimens, nor in adults. The triangular black spot extending between the eyes has a very fine white margin, and sometimes encloses a light-coloured spot in its centre. In the light-coloured variety there are a number of dark-coloured spots with pale margins, arranged in a circle round a central one, with smaller spots about them. The Y-shaped mark has also an obscure white margin. The sides are generally black-spotted. In the dark variety, the chin, throat, and thorax are black, marbled with whitish; more so on the belly, the posterior third of which is immaculate yellow. The upper lip with four black bars on each side. A black band from the eye below the canthus rostralis to the snout; a black band over the eye through the tympanum; a very delicate yellowish line along the canthus rostralis, the margin of the eyelid, and along the supratympanal fold to the shoulder. A black band from the vent along the back of the thighs, with a white margin above and a white spot near its termination on the lower third of the thigh. Limbs barred with brown. Palms and soles black, with a bright yellow external margin. In the pale-coloured variety all these markings are the same, only less intensely marked.

I have a specimen of Dr. Jerdon's *X. gigas* beside me, but I find that it in no way differs from the Darjeeling large specimens, which are the adults of this species.

*Hab.* Sikkim Himalaya, 3500 feet.

I removed some land-shells from the stomach of this species large enough to form a good meal.

#### CACOPUS GLOBULOSUS, Gthr. *l. c.* p. 416.

I procured a specimen of this species in the Botanical Gardens, Calcutta, some years ago, but have never succeeded in obtaining another. It is an adult female, measuring 2" 6"', and the hind limb 2" 8"'. This specimen, when brought to me, was distended in the same way as Günther's young specimen, but I was unable to learn any thing of its habits. The ovaria are very small (June).

Uniform brown above, yellow below.

Besides the fold between the eyes, and descending to the angle of the mouth, there is a short obscure fold from below the posterior angle of the eye to the shoulder. This fold is very obscure on one side, but well marked on the other, and it may be a variable character. There are a number of minute black tubercles on the sides of the thighs external to the vent.

The vomerine prominences appear to be more mucous folds than papillæ.

DIPLOPELMA BERDMOREI, Blyth, Journ. As. Soc. Beng. xxiv. p. 720.

*Diplopelma pulchrum*, Gthr. ; Theobald, Cat. Rept. As. Soc. Mus. p. 83.

Head triangular; snout short, conical, and rounded, without canthus rostralis; nostrils near the extremity of the snout, directed upwards, outwards, and forwards. Body rather short. Limbs long, from the vent to the metatarsal tubercle one and a half times the length of the body. Two metatarsal tubercles, the outer one not very large, rounded, the internal one laterally compressed. Toes completely webbed, dilated, and truncated at the tips; fingers rather elongate, slightly dilated and truncated at the tips. Tongue elongate, ovate, entire behind. Tympanum hidden. Skin smooth.

“Dusky above and on the throat; rest of the lower parts reddish white; some black spots on the sides, and interrupted bands on the limbs. In young individuals a dusky bottle-like mark appears on the upper parts, with the neck of the bottle extending from between the eyes to between the shoulders. In adults this becomes inconspicuous, but is distinctly traceable.” (*Blyth.*) Blyth’s three types, stated by Theobald to be no longer in this museum, were identified by him as *D. pulchrum*. One accurately agrees with Blyth’s measurements; and all tally with his description.

The longish legs and strongly webbed toes of this form would seem to separate it from this genus, which, however, I hesitate to do, as it agrees with it in all the following particulars:—It has the short snout, narrow gape, hidden tympanum, edentulous jaws and palate, elongately ovate, entire tongue, and free fingers of *Diplopelma*. Blyth says it appears to be common in Pegu.

#### DIPLOPELMA INTERLINEATUM, Blyth.

*Engystoma (?) interlineatum*, Blyth, Journ. As. Soc. Beng. xxii. p. 732, and xxiii. p. 720.

Snout short and pointed; nostrils near the tip of the snout. A fold of skin across the vertex from the posterior angle of the orbit, and continuous with the fold over the tympanum to the shoulder. Tympanum covered with the skin, but indistinctly seen. A strong fringed mucous fold across the roof of the mouth before the œsophagus. Tongue elongately oval, entire. Fingers with large subarticular tubercles; fourth finger about half the length of the third, and almost one-fourth shorter than the first; the second slightly longer than the first. Toes rather short, nearly one-third webbed, with prominent subarticular tubercles. Two metatarsal tubercles, not very prominent, the internal one more elongate than round, the one at the base of the fourth toe small and rounded. From the vent to the metatarsal tubercle is the length from the vent to the postorbital fold. Upper surface smooth, profusely covered with small pores. A few minute tubercles on the upper surface of the snout. Sides of the mouth, chin, throat, and thorax finely tubercular. Abdomen, under surface of thighs, and anal region densely and coarsely tubercular. A few small

white tubercles on the throat, chin, and breast, with a prominent one on either side of the latter. Length 1" 9", hind limb 1" 11".

"Colour, a golden clay-brown above, with median blackish vertical streak, diverging into two at the nape, which are continued to the base of each hind leg; and when the hind leg is closed it appears to be continued on to the limb. Anteriorly to the eyes, a narrower branch passes over the orbit, and is also continued to the base of the hind limb; and a median duller line appears on the croup, which abruptly diverges towards the vent. Narrower intermediate lines are also traceable; and the principal streaks are set off by a pale golden edge. Limbs beautifully banded; the tarse dark posteriorly. Throat and breast blackish; the tuberculated belly and thighs tinged with yellow. Sides black, continued in a straight line from the nostrils and eyes, and strongly contrasting with a bright pale golden edge above."

Such is Blyth's description of the coloration of his type, which I have been unable to discover in this museum. In his description of his second specimen, from which the foregoing account has been derived, he mentions that "the markings in it are much less distinct, while a great pale-edged black spot has become intensely developed, adjoining the base of each thigh above. In the former specimen three black spots may be seen in process of development, at the ends of the two streaks which diverge from between the shoulders. In a male the entire upper parts are pale, and have a rosy tinge, with the same black spot conspicuously developed, while the remains of the longitudinal striæ are barely traceable. All are probably very beautifully coloured when alive."

In this specimen the general colour above is a pale violet earthy grey. A narrow dark violet brown band runs from the tip of the snout to the occiput, where it divides into two branches, which run backwards and outwards, and terminate at the base of the thigh in a large rich dark brown spot or drop, with a yellow margin. A smaller similarly coloured spot, internal and posterior to it at the base of the thigh above, and continued to the back of the thigh as a narrow violet-brown band; another longish linear spot external to it on the sides; faint indications (the specimen is much bleached) of some reticulated bands on the side of the occiput and sacral region; a broad violet-brown band from the eye through the tympanum along the side, with a pale yellow margin above; a few black spots on the oscilla; a narrow yellowish arched line from above the anus along the back of the thighs; thigh with three narrow oblique violet-brown bands, and the tibia barred or reticulated with the same colour; under surface dirty yellow, mottled with brownish on the tubercles of the chin, throat, and thorax.

This form has the edentulous palate and non-dilated toes of *Diplopelma*; in its general form, however, and in the strong fringed ridge across the palate it approaches *Callula*.

*Hab.* Pegu.

*BUFO PANTHERINUS*, Boie.

Crown of the head concave, without bony enlargement; no gland

on the thigh; tympanum very distinct, nearly as large as the eye; parotoids slightly longer than the head, elongately kidney-shaped, moderately broad, not very prominent, without a black edge. Third finger longer than the fourth; toes half webbed, the membrane prolonged along the toes as a fine fringe nearly to the tips. Metacarpus with two coloured rather small tubercles, the innermost one being the largest. Numerous rather flat tubercles of different sizes, each capped with a small horny papilla.

Adults light greyish olive, with numerous dark olive-black spots, communicating and producing a reticulated appearance; spotted or obscurely barred with the same colour on the limbs, and with an obscure interrupted dark band between the eyes, and occasional indistinct traces of a pale vertebral line; below whitish.

All the young specimens are various shades of olive-grey or brown, whitish below. Length of adult 3 inches.

*Hab.* Agra district.

This species is closely allied to the European *B. viridis*, but its tympanum is large and distinct.

It appears to be common in the Agra district, where it is associated with *B. melanostictus*. With *Psammosaurus griseus*, this is the second African reptile which has been added to the fauna of the north-west within the last three or four years. Very little is known of the reptiles of the dry desert country to the south-west of Delhi and Agra; but further researches will in all probability prove that many more of its forms are African.

The similarity of the markings of the adults of this species to those of *Cacopus breviceps* is remarkable, and suggests that either one or the other may be an instance of mimicry.

*BUFO MELANOSTICTUS*, Schneid.; Gthr. *l. c.* p. 422.

Agra.

*BUFO SIKKIMMENSIS*, Blyth.

*Bombinator sikkimensis*, Blyth, Journ. As. Soc. Beng. vol. xxiii. p. 300.

*Scutigera sikkimensis*, Theobald, Cat. Rept. As. Soc. Museum, Calcutta, 1868, p. 83.

This remarkable Toad, which was referred by Blyth to *Bombinator*, has neither maxillary nor vomerine teeth. It is very closely allied to the true Toads, and only differs in its free toes and in its slightly notched tongue, which, however, resembles that organ in *Bufo* in its elongately ovate form, and in being free behind. It has no cranial ridges; and its parotoids, which stretch from the eye to the shoulder, are very narrow and linear. Its Eustachian tubes are not obsolete, as described by Theobald, but are very minute orifices placed close to the angle of the mouth. The character on which Theobald has founded the genus is an unfortunate one, as it is purely sexual and peculiar to the male. It consists of two plate-like callosities on either side of the thorax, thickly studded with minute dark-brown granules, such as occur on the same region in *B. liebigeri*



and other Batrachia. Similar to these structures is the rough, almost spiny surface on the upper aspect of the first and second fingers, and on the inner margin of the third. The female, as in other Batrachia, has no trace of these structures. There is in some an indistinct trace of an external ear. The canthus rostralis is round, and the nostril is situated rather below it, halfway between the eye and the end of the snout, which is short and round in front. The gape is about the length of the head. The surface of the head is slightly concave, due to a feeble swelling of the rounded canthus rostralis. The whole upper surface and sides of the body is densely covered with small glandular warts, among which many large ones are interspersed, bearing one or two little sharp horny spines, which are generally broken across, giving rise to Theobald's so-called apical pore; no large warts on the limbs; smooth below. The female is much less glandular than the male. The legs are rather short, as in *Bufo*. The first toe is very short; and the fifth is almost half the length of the fourth, and is very little shorter than the third; a fold of skin along the outside of the fifth toe. The fingers, as in *Bufo*, more slender in the female than in the male; the third finger longer than the fourth. The length of the body is equal to the distance between the vent and the base of the fourth toe.

The mere circumstance that the toes are not webbed does not appear to be a sufficient reason for separating this Frog from the ordinary Toads, which it resembles in all its other characters.

The specimen, the third that has been found, that has given rise to these remarks was procured on the Sengalula range, Darjeeling, at an altitude of 12,000 feet.

#### HYLORANA NIGROVITTATA.

*Gymnodytes nigrovittatus*, Blyth, Journ. As. Soc. Bengal, xxiv. pp. 718, 719.

Snout short, conical; canthus rounded; loreal region longitudinally concave; tympanum about one-fourth less than the long diameter of the eye. Vomerine teeth on two rounded eminences placed obliquely at some distance from the internal angle of the choanæ, converging, but widely separated. Tips of fingers and toes but slightly dilated. The first finger is slightly longer than the second, and the distal phalanx shorter than the fourth; the third has its distal phalanx longer than the fourth. Feet rather small. Toes feebly webbed, with the exception of the fourth; the fourth toe is one-half the length of the body. Two metatarsal tubercles, the inner one elongate, prominent, and the other rounded and conical. From the vent to the heel is very little less than the length of the body. Skin smooth, very finely tubercular on the sacral region and the upper surface of the legs and the back of the thighs around and external to the vent; a glandular fold from the eye, along the side of the back; an interrupted glandular fold from the angle of the mouth over the shoulder, but disappearing behind it; sometimes a few tubercles tending to a linear arrangement in front of the groin immediately below the dorsal line.

Pale plumbeous brown above (in spirit); in some a very obscure pale line along the lateral fold; a dark brown band from the eye along the side, with a darker margin below the glandular fold. On the sides in some, below this band, a few dark-brown spots between the axils, tending to form a second dark band, separated from the other by a broad pale interval. A dark line from the eye to the snout; upper lip dark anteriorly, paling to yellowish on the glands behind the mouth. Under surface dirty yellowish, obscurely spotted with brown in some; two longitudinal lateral brown streaks on the throat and thorax; back of the thighs and under surface of the legs strongly marbled with blackish over a yellowish ground; upper surface of thighs finely reticulately barred, and legs broadly barred with brownish; under surface of thighs brown-spotted.

No.	Length of body.	Snout from ant. angle of eye.	Hind limb.
1	2" 0'''	$\frac{7}{24}$ '''	3" 2'''
2	1 9	$\frac{7}{24}$	3 0
3	1 $\frac{23}{24}$	$\frac{7}{24}$	3 0

No. 1 is Blyth's type. This species is closely allied to *R. macularia*, Blyth, from which it is distinguished by its shorter and less pointed snout, smaller feet, and coloration.

This species inhabits Pegu.

HYLORANA NICOBARIENSIS, Stoliczka, Journ. As. Soc. Bengal; xxxix. p. 150, pl. 9. fig. 2.

Habit slender. Snout rather narrow and tapering; upper jaw projecting but little beyond the lower; canthus rostralis triangular, rounded, with the nostril slightly below it, and much nearer the end of the snout than the eye; loreal region longitudinally concave; tympanum distinct, nearly as large as the eye. Vomerine teeth on two short feebly developed slightly oblique processes near the internal margin of the choanæ, but separated by a wide interspace. Tongue cordate, pointed anteriorly, and not very deeply notched. Disks small. Limbs slender and rather long. The first finger is almost as long as the fourth, and is about the same length as the second; the third is about one-third longer than the fourth. Subarticular tubercles large. From the vent to the heel is a little shorter than the body. The fourth toe is a little less than one-half of the body. Two rather small metatarsal tubercles; the inner one short and oblong, and the outer one round and but little smaller than the former. Toes rather feebly webbed, the membrane reaching to the extremities of the third and fifth toes. Skin quite smooth. Dr. Stoliczka gives the following measurements of the two largest specimens:—

	♂ in.	♀ in.
Length of body	2	1 $\frac{14}{16}$
Distance from vent to heel	1 $\frac{12}{16}$	1 $\frac{12}{16}$
Length of fourth toe	$\frac{15}{16}$	$\frac{15}{16}$
Total length of hind limb	3 $\frac{4}{16}$	3 $\frac{3}{16}$

He describes the colour above as olive greenish, much darker and almost black in some male specimens; upper glandular folds pale; upper lip whitish; lower glandular tubercles usually pure white; sides of body, including the loreal region, black, which uniform colour, however, fades on the posterior part of the body, and is sometimes replaced there by a few dark spots; lower parts more or less mottled with black, sometimes almost wholly black in the males, but yellowish between the thighs; in the females the lower parts are whitish, either uniform or only slightly dusky; fore limbs with few indistinct cross bands; a dark streak in front of the upper arm, and another one behind, as well as on the lower arm; hind limbs above banded with brown, behind indistinctly mottled with dark and yellow.

Dr. Stoliczka was at first inclined to regard this species as a variety of *H. tytleri* (? *erythræa*), from which he now considers it to be distinguished by its "larger tympanum, the usual total want of the short downward bent lower glandular fold, the better-developed disks of the fingers and toes, the greater length of the third finger, the presence of two almost subequal metatarsal tubercles, its distinctly larger gape, and more distant vomerine ridges."

*Hab.* Nicobar Islands.

#### POLYPEDATES MACULATUS, Gray; Gthr. *l. c.* p. 428.

The Darjeeling specimens of this Frog now before me are all more or less distinctly spotted on different shades of grey. The largest is pale, almost cream-colour, with very indistinct spots, and no trace of a band between the eyes, and without an hourglass-marking. The brown band along the canthus rostralis and over the tympanum, however, is very distinct. The other two specimens are dark slaty, with indications of the hourglass-marking on the anterior part of the back; and in both the transverse band between the eyes faintly shows.

This is not an uncommon species about an elevation of 3000 feet in Sikkim, and is chiefly found among long grass, and not, as its name (Tree-Frog) would lead us to expect, on trees. This is the case also with *Rhachophorus maximus*, which is found in similar situations, also in ponds and wells. It likewise possesses the power of changing its colours.

#### POLYPEDATES QUADRILINEATUS, Wiegman.

The dark bands are very narrow and not very distinct; and the black edging can hardly be said to exist. The bands also show a tendency to break up posteriorly, and over the sacrum they are reduced to small black spots. The black band from the snout and over the tympanum is prolonged along the side to almost halfway between the axilla and groin, but behind that it is reduced to widely distant black spots with white edges. The general colour is a pale olive-grey; the bars on the legs and the marbling on the back of the thighs are well marked, especially the latter. A dark band edged anteriorly with white runs along the back of the forearm to the little finger; the under surface of the lower jaw is finely

speckled with brown. The vomerine teeth are in convergent series. The surface of the head between the orbits concave; roughish surface above each canthus rostralis and between the orbits, and extending along the occiput, enclosing a smooth triangular space; no transverse ridges. Length 2" 9''' ; thigh 1" 5''' ; calf 1" 5''' ; heel 9''' , to fourth toe 1" 1''' .

This specimen appears to be intermediate between true *P. quadrilineatus* and *P. maculatus* ; but the black lines on its back and other characters affine it to the former.

Gowhatty, Assam, considerably below 2000 feet.

POLYPEDATES SMARAGDINUS, Blyth, Journ. As. Soc. Beng. vol. xxi. p. 355 ; Jerdon, Proc. As. Soc. 1870, p. 83.

Blyth merely says, "A Tree-frog from the Naga hills, Assam (*P. smaragdinus*, nobis). Length of the body  $3\frac{1}{4}$  inches, hind limb  $5\frac{1}{4}$  inches. Wholly green above, changing in spirit to livid blue ; underparts white." Dr. Jerdon is not more explicit about the form which he supposes to be Blyth's *P. smaragdinus* ; for he merely says that it is "A very large green-backed Frog." Dr. Jerdon has presented his specimens to this museum ; and I take this opportunity to describe them.

Body moderately long and slender ; legs very long and slender. Head rather broad, upper surface slightly concave on the mesial line ; distinct canthus rostralis ; loreal region concave ; snout of moderate length, rounded in front ; tympanum distinct, a little more than half the diameter of the eye. Vomerine prominences placed nearly transversely across the palate, from the inner angle of the choanæ, from which they are separated by a short interval, convergent behind, but not in contact. A single line of from nine to twelve short nodular teeth. Skin quite smooth throughout ; skin adherent to the surface of the head ; indications of a curved osseous crest. No enlarged tubercles below the anus ; no appendage to the heel. The body is one-seventh the distance between the arms and the heel, shorter than the length between the two points. Fingers with a very rudimentary web ; disks large, considerably larger than those of the toes, which are broadly webbed, the membrane reaching to the disk.

The upper surface is pale livid blue (spirit specimen) ; under surface of chin, throat, and chest brownish, the rest yellowish. A dark brown band through the loreal region and along the sides of the groin. Upper jaw with a white line from the snout, below the eye and tympanum, passing behind the axilla to the ventral surface. Sides marbled brown and yellow ; legs with broad brown bars ; back of thigh marbled with yellow and brown ; arms slightly marked with brown bars and spots. Two youngish specimens have a single longitudinal series of black spots over the vertebral line, with faint indications of others. Length of body 3" 2''' ; hind limb to heel 3" 8''' ; heel to extremity of largest toe 2" 6''' .

I am not at all satisfied that this is more than a variety of *P. maculatus*.

*POLYPEDATES MARMORATUS*, Blyth, Journ. As. Soc. Beng. xxiv. p. 188; Gunther, *l. c.* p. 428.

*Polypedates afghana*, Gthr.; Jerdon, Proc. As. Soc. 1870, p. 84.

Habit rather stouter than *P. maculatus*. Snout of moderate length, not depressed, moderately pointed; canthus rostralis distinct; nostril slightly below the canthus rostralis; loreal region rather deeply concave and granular. Eye large and prominent. Tympanum very small, smaller than the disk of the third finger. Vomerine teeth on two transverse ridges, on a line with the posterior margin of the choanæ. Skin above densely covered with small tubercles, with white apices. A large white tubercle on the middle of the head between the anterior angle of the eyes; a few large glandular-like tubercles above the tympanum on the sides and behind the angle of the mouth. Belly and back of thighs finely tubercular. Fingers free, with the disks very large. Toes completely webbed, with the membrane extending to the disks; metatarsus with a small oblong tubercle. From the vent to the heel is considerably longer than the body.

Colour (in spirit) pale yellowish, with large spots with black centres, paling towards the margins of the spots, so that they become confluent; a few white spots interspersed among them. Under surface yellowish, spotted with dusky on the chin, throat, and chest. Lips and limbs broadly barred with blackish, the barring on the legs extending on to the fingers and toes.

Adult (Blyth's type), 3'' 3''' in length; limb 5'' 7'''.

Adult (Darjeeling), 2'' 8''' in length; limb 5'' 1'''.

Blyth's specimens were from Pegu; I also obtained it at an elevation of 3000 feet on the Kakhyen Hills, in the north-east of Burmah, on the confines of China; and other specimens are from the neighbourhood of Darjeeling, at an height of 3000 feet.

*POLYPEDATES HASCHEANUS*, Stoliczka, Journ. As. Soc. Beng. vol. xxxix. p. 147, pl. ix. fig. 3.

This is a small species, perhaps the smallest known form of the genus, measuring only  $\frac{1\frac{5}{16}}{16}$ '' and the hind limb  $1\frac{9}{16}$ ''.

The head is rather large compared with the length of the body; and its breadth is indicated by the circumstance that the distance between the eyes is nearly the length of the moderately long snout. The vomerine prominences are small rounded nodules, their anterior margins being almost on a level with the posterior margin of the choanæ, from which, and also from one another, they are widely separated. Dr. Stoliczka describes an indistinct dorsal glandular fold on the fore part of body, which is clearly traceable on the posterior half of it. The existence of such a structure would lead us to refer this Frog to *Hylorana* and not to *Polypedates*; but on carefully examining Dr. Stoliczka's specimens in this museum, I fail to detect the slightest indication of a dorsal glandular fold. The fold over the tympanum is well developed, and the disks of the fingers and toes are moderately large.

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Dr. Stoliczka describes the species as of very active habits, and states that he found it tolerably common in the forests on the Penang Hill, about 1000 feet above the sea.

POLYPEDATES ANNECTENS, Jerdon, Proc. As. Soc. Beng. 1870, pp. 83, 84.

Habit moderately slender. Head rather broad, slightly depressed; snout short and rounded; canthus distinct, rounded; loreal region nearly vertical, slightly concave; nostrils near extremity of snout; distance between the eyes as long as the snout; tympanum distinct, about one half the long diameter of the eye. Vomérine teeth on two prominent rounded processes, close to the internal margin of the choanæ, with a narrow interspace between them. Tongue cordate, almost entire behind, or with a very faint notch. Disks rather well developed. Limbs of moderate length. Fingers with a distinct membrane at their base; first finger small, little more than one-half the length of the fourth; second about one-third shorter than the third; fourth a fourth shorter than the third. From the vent to the metatarsal tubercle is a little longer than the body; a short oblong metatarsal tubercle. Toes one-half webbed; the first toe small, one-half the length of the second. A strong glandular fold from the eye over the tympanum to the shoulder, and prolonged slightly beyond the latter. Smooth above, densely granular below, and on the under surface of the thighs.

Above uniform dark greenish violet; a very narrow pale line from above the shoulder, prolonged downwards and backwards on to the side, expanding in its latter half into the yellow of the abdomen, with a few intensely black spots, in linear series, on the sides, in and before the groin; a broad dusky band below the anterior half of the narrow white line. Under surface and back of the thighs bright yellow, the latter with large black spots; a few on the anterior margin of the tibia and tarsus. Length 1" 7''' ; hind limb 2" 7'''.

*Hab.* Khasi Hills.

Dr. Jerdon observes of this species that it forms a link between this genus and *Rhacophorus*, having the basal portion of the fingers webbed; but the fingers of *P. pleurostictus* and *P. reticulatus* have the membrane quite as well developed as in the present form. The partial prolongation of its supratympanic fold on to the sides of the body would seem to indicate that its affinities were more in the direction of *Hylorana*.

RHACOPHORUS MAXIMUS, Gthr. ; Günther, *l. c.* p. 435.

This species appears to be common throughout North-eastern Assam, and southwards to the Khasi Hills, but to be rather scarce in Sikkim; for out of a large collection of Frogs from thence I have only obtained one specimen, while in collections from Eastern Assam it is one of the prevalent forms. It is associated in the Khasi Hills with *R. maculatus*. Its extension as far east as Afghanistan seems doubtful. The specimen which Günther refers to as coming from Afghanistan probably had a similar history to the specimen of

*Oligodon dorsalis*, which was doubtfully referred to Afghanistan because it happened to have been found in Griffith's collections. Griffith, however, made his most extensive collections in Assam, Upper Burmah, and the Khasi Hills; and it seems to be probable, from such facts as these of *O. dorsalis* and this species, that his Afghanistan collections have been mixed up with the former.

This Frog attains a large size, the largest specimen before me measuring 4" 2''' ; hind limb 6" 5'''.

The vomerine teeth are on two prominent transverse ridges from the anterior internal angle of the choanæ, with a wide interval between them. The canthus rostralis is well marked in the adult, and the nostril is slightly below it, near the end of the snout. The diameter of the tympanum is more than two-thirds the long diameter of the eye. The skin is smooth, but the supratympanal and orbital and posttympanal regions are finely granular, and the abdomen and under surface of the femora, and sometimes the upper surface of the latter, are granular. From the vent to the heel is the length of the body.

Above uniform violet, in spirit; under surface brownish, darkest on the sides when in contact with the colour of the back, from which it is occasionally separated by a paler violet band. The brown of the sides in others is densely spotted with darker brown. The under lip is yellow.

I have examined twenty specimens of this Frog of all ages.

CALLULA PULCHRA, Gray; Gthr. *l. c.* p. 437.

Some years ago I obtained two specimens of this handsome Frog in the Botanical Gardens, Calcutta; but I have never succeeded in procuring another. The largest specimen in this museum is 2" 9''' in length, the hind limb being 2" 8''' . Not uncommon in Upper Burmah.

4. On eight new Species of Birds from Western Yunan, China. By JOHN ANDERSON, M.D., F.L.S., F.Z.S., &c., Director of the Indian Museum, Calcutta.

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(Plate XI.)

SUTHORA BRUNNEA, n. sp.

*Supra fusco-olivacea: pileo et nucha rufo-ferrugineis: mento, gula et pectore roseo suffusis, et leviter fusco-striatis; abdomine fusco-flavo; hypochondriis crissoque olivaceo-brunneis: alis et cauda brunneis: remigibus primariis et reatricibus flavo-olivaceo tenuiter et pallide marginatis.*

Long. tota 5·20, alæ 2·15, caudæ 2·74, rostri a rictu ·35, a fronte ·35, tarsi ·84 poll. Angl.

*Hab.* Momien, Yunan, ad alt. 4500 ped. Angl.